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MODERN TRANSPORT

"THE TIMES" OF THE TRANSPORT WORLD

EXHAUSTERS BY THE THOUSAND

See Page 13

VOL. LXXXIII No. 2152 [Registered at the G.P.O. as a newspaper] LONDON, AUGUST 13, 1960 PRICE ONE SHILLING

CURRENT TOPICS

Prestige from Pullman

FEW items of railway modernisation have added to the prestige of British Railways so much as the new Midland Pullman sets, next month to be partnered by the similar first- and second-class self-contained diesel-electric Pullman sets on the Western Region. They have fulfilled our suggestion of being on a par with or superior to the Trans-Europ-Express sets and they have raised the morale of railwaymen as they have won commendation from the public. This is not merely domestic reaction or a case of British self-satisfaction. The leading American railway officers who recently formed a delegation to the railways of Europe and saw Britain, France, Switzerland, Italy, Western Germany, Russia, Belgium and the Netherlands gave the Midland Pullman the laurels on their return to New York. They thought it the finest train they had seen abroad. Mr. Curtis Buford, vice-president of the Association of American Railroads, said how impressed they were with the speed and by the interior decoration. "The seating was comfortable, the lighting excellent and the air-conditioning good. We found the kitchen very well planned and we had good food on our run." The new trains thus bring lustre both to British Railways and to the British railway carriage building industry.

The Railway Staff Shortage

ANTICIPATION of difficulties in maintaining coal distribution by rail in the coming winter is a reflection of the staff shortage of 10 months ago when the Birmingham area, with a net loss for a time of over 30 men a week, was worst affected. The warning came last week from Mr. Douglas Cory-Wright, deputy chairman of the Industrial Coal Consumers' Council, who attributed any possible failure on the part of the railways largely to staff difficulties. Traffic, it is said, is likely to be adversely affected, particularly at Midland junctions and in London, because of a serious shortage of shunters, guards and footplate staff. Plans are being made to minimise the effects of any hindrance to the free flow of traffic and steps taken to move the maximum volume of coal traffic during the next three months while the weather is still good. Meanwhile "serious shortages of staff" have necessitated the withdrawal of some trains in the outer suburban area of the Western Region, the services affected being Maidenhead—Bourne End—High Wycombe, Bourne End—Marlow, High Wycombe—Princes Risborough, and Princes Risborough—Thame—Oxford. There is in fact a chronic staff shortage in all regions, and particularly in the industrial areas where regular factory hours and free weekends are attracting experienced railwaymen away from the Commission. It is a repetition of last year's happening when, according to the B.T.C. report for 1959, area boards and general managers were encouraged to take corrective measures such as raising the lodging allowances for staff transferred from places where the labour situation was easier and improving staff amenities and hostels. The report states that shortages of operating staff in the Western Region caused a considerable amount of late running and dislocation of services. Key centres in the London Midland and Southern Regions were also affected but in most cases it was possible to keep traffic moving and avoid loss of custom, although operating efficiency was impaired.

Test for Guillebaud Principle

THE report thus puts the situation: "In certain industrial areas the Commission have to compete for labour with manufacturers in the price of whose products wages represent a relatively small charge compared with the labour element in the cost of providing railway service. In two or three railway towns in particular, new factories have been established which attract trained railway workers, including skilled tradesmen." Bus operators have likewise been affected: one medium-sized garage has lost 40 men in a week. The London Transport Executive reports that the number of vacancies in the road services operating department rose from 828 at the end of 1958 to 2,785 at December 31, 1959, despite widespread advertising in the Press and on vehicles and premises, as well as the special methods of recruiting in Barbados and in Ireland. Booking clerks are also in short supply, although ordinary clerical staff seem to be readily available. Incidentally, the L.T.E. had a surplus of works staff at Charlton following closure of the works there upon the abandonment of trolleybuses, but most of these were transferred to other departments or retired voluntarily. So far as British Railways is concerned the situation may improve when the higher wages and better conditions arising from the Guillebaud report become more generally known through the fresh recruiting campaigns which are now being launched. The inconveniences of shift working may well be counterbalanced by the offer of wages in line with those in other industries coupled with the fact that railways offer greater freedom and opportunity for initiative alien to the monotony of the factory. The Stedeford Committee is understood to have notified its impression that the operating staff is excessive and that a vigorous application of work study combined with new equipment should enable the railways to be run more efficiently by fewer men. Rumour does not clarify whether this is to accompany a drastic reduction in route mileage beyond the 1,800 miles to be closed under reappraisal proposals. But this will not overcome the shortage in key grades in industrial areas where duties cannot be adjusted by slide-rule methods. The next few months will show whether the Guillebaud principle can aid recruiting in the districts and grades where men are most urgently needed. The test will be a severe and vital one.

The Bluebell Line

EVEN during the palmiest days of railways it is doubtful if the Lewes and East Grinstead Railway was a highly remunerative proposition. It ran through relatively sparsely populated country, its stations were well away from the communities they purported to serve, and its cost of construction and operation was probably above average. Its main use to the London, Brighton and South Coast Railway, which took it over during its formative stages, was as a means of blocking such ventures as the proposed Metropolitan and Brighton Railway, which in 1876 had threatened the passenger traffic to its largest resort. It originally opened on August 1, 1882, and the connection from its mid-point at Horsted Keynes to Haywards Heath followed on September 3, 1883. In horse cartage days a reasonable amount of freight traffic ensued, but with the motor era this activity faded away, while the car and the bus and the attractions of high-speed train services on the Brighton main line whittled away what passenger traffic there was. British Railways withdrew the train service from East Grinstead to Lewes as from June 13, 1955, at the same time closing the portion from Horsted Keynes to Culver Junction on the Uckfield—Lewes route to all traffic. Miss Madge Bessemer, a local resident, cited the 1878 Act under which the L.B.S.C.R., on taking over the scheme from the local promoters, was compelled to run at least four trains each way daily and from August 7, 1956, the Southern Region accordingly provided such a service. A B.T.C. Act to authorise its closure was then obtained and final closure took place on March 16, 1958.

Revivification

BY this time the popular Press had dubbed the railway the "Bluebell line" and widespread interest had developed in its survival, irrespective of its economic merits. A year later a society was proposed under the title of the Lewes—East Grinstead Railway Preservation Society. After an approach to the Southern Region an arrangement to acquire the 4½ mile Horsted Keynes—Sheffield Park section for £34,000 was put forward and the Bluebell Railway Preservation Society, which now has 1,400 members, was launched on June 14, 1959, backed by a limited liability company, Bluebell Railway, Limited. With praiseworthy enthusiasm the members have rehabilitated the track to the requirements of the Ministry of Transport, have acquired a set of coaches, now running in blue livery, and as a first instalment of a live railway museum have obtained as motive power a Stroudley Terrier tank *Stepney* and a South Eastern P Class 0-6-0 tank. When Captain Anthony Kimmins opened the line on Sunday, August 7, on the invitation of the chairman, Mr. John Leroy, Mrs. Kimmins named this locomotive *Bluebell*, launching it on its new career with a bottle of champagne. The engines were then marshalled either end of the two-coach set and worked a special service for the remainder of the day. The ordinary train service, approximately hourly, will be provided on Saturday and Sunday afternoons from August 13, the round trip from Sheffield Park to Horsted Keynes (Bluebell Halt) and back taking about an hour, although running time is 18 min. The return fare is 2s. 6d. second class (about 3·3 pence a mile) and 3s. 6d. first. A special Southdown connecting bus service operates at weekends from Chailey Cross Roads to Sheffield Park Station, the headquarters of the railway. So long as no comparisons are made with railways in business on a serious job of work this seems an excellent outlet for enthusiasm for railways and if it offers a useful means of showing off various historical locomotive types in steam it will achieve acclaim among railway fans.

LEADING FEATURES IN THIS ISSUE

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Pirate Goods Vehicles

FOR using a dual-purpose vehicle of the 12-seat type without a C-licence a member of the T.R.T.A. has received a summons. It seems that the authorities looked at the wooden seats, also at a roof rack which had been fitted, and decided that the vehicle must have been acquired primarily with the intention of carrying goods. The assiduity of policemen and others who bring these pettifogging charges continues to amaze. No doubt the laws must be observed in the spirit as well as the letter, but it would have been very much more gratifying if the offender had been one of those countless people using miniature buses without road service licences and at separate fares, to the detriment of bus operators. For that matter it surprises that a closer look is not directed at what appears to be an increase in the misuse of genuine goods vehicles. Sporadic observations over the past two months in the London area have disclosed at least fifteen vehicles devoid of a carrier's licence, three of them with neither carrier's licence nor excise licence. These were not small vans or tippers but seven-tonners and upwards evidently engaged in general haulage. Singularly, almost all of them were of one make and type. How do these pirates get by the gaze of policemen and traffic examiners day after day? Needless to say, none of them advertise themselves with the owner's name. It is difficult to avoid the conclusion that there is a small, but certainly significant amount of tonnage on the roads competing most unfairly with licensed operators. The trifling penalty inflicted on those who are caught is perhaps the most depressing aspect of the situation and the subsequent grant of a licence in many cases may actually encourage others to follow suit.

Congestion at Woking

AT the annual meeting of the shareholders of the Aldershot and District Traction Co., Limited, Mr. T. Robert Williams, the chairman, said that about one-third of the company's stage carriage mileage was unremunerative. There would be minor pruning on winter Sundays, but otherwise they waited for the report of the Jack Committee. For his part he thought the only solution to a difficult problem would be a realistic approach to the taxation of their primary commodity, fuel oil. During the year eight 40-seat one-man buses had been acquired and they now had over 50, a high proportion in a mixed fleet of 300. The 34 Dennis Loline 68-seat double-deck buses had operated satisfactorily for two years and 57 front-entrance units of the type would be bought in the next two years, as well as 16 single-deckers with 43 seats. The increased passenger capacity of rolling stock had enabled a reduction of 20 in the fleet. But developing housing estates might call for more double-deckers on urban services. "I referred at some length last year," said Mr. Williams, "to the fact that the provision of bus services along shopping streets of towns should not be prejudiced by the parking of cars along such streets and to the inequity to the mass of the travelling public, in requiring buses to operate out of bus stations, in order to provide greater facilities in the streets for private cars. At the present time, there is under consideration in the Woking area, the provision of a bus station in that town. I hope that before the scheme goes forward its cost and the effect on facilities provided for the public will be fully evaluated. London Transport and ourselves, as the providers of stage carriage services in the Woking area, utilise a stretch of road near the railway station for the short periods between the arrival of a bus from one service to the time of its departure on another. We, in ourselves, do not cause congestion, and if we were compelled to move from such a convenient place, elsewhere, I feel convinced that the space so released would be immediately occupied as a parking place for private cars or taxis, something which cannot be in the interests of the majority of the travelling public.

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The Editor is prepared to consider contributions offered for publication in MODERN TRANSPORT, but intending contributors should first study the length and style of articles appearing in the paper and satisfy themselves that the topic with which they propose to deal is relevant to editorial requirements.

How Speedy the Speedbird?

WHEN asked on his final appearance as chairman of the British Overseas Airways Corporation what were his feelings about the use of supersonic aircraft, Sir Gerard d'Erlanger, before making some very reasonable comments, pointed out with a certain amount of relief that this would really be the worry of his successor, Sir Matthew Slattery. The problem facing the Corporation is a difficult one, for it could be said to have enough on its plate without needing to face the likelihood of supersonic operation and the adverse reactions that could ensue. Although the report for 1959-60 showed a most commendable improvement over the preceding year (MODERN TRANSPORT, August 6), and the Corporation itself made a profit on its own operations after providing for the payment of interest, the air transport business is so delicately poised that it requires only international turmoil affecting one of the more remunerative routes or a relatively small decline in international trade for the whole financial picture to change. Furthermore the current year will show whether the introduction of lower fares on the North Atlantic services and on the cabotage routes to British colonial territories will bring in sufficient additional traffic to improve upon the revenues obtained at the old rates. It is a remarkable thing that airlines are subject to even more criticism than surface carriers on the grounds of failure to seek traffic by reducing fares. The critics never seem to stop to take into proper appreciation the costs of maintaining day in and day out a regular service—their arguments are usually based upon rates that can be quoted for a special charter with a full load. Besides these aspects there are the sharing of traffic with other operators, both British and Commonwealth, the possible need to dispose of aircraft at knockdown prices far below their present value on the Corporation's books, and the losses still incurred by some associated companies.

Problems of Associates

TAKING the most obvious problems first, the reorganisation of B.O.A.C. Associated Companies, Limited, has undoubtedly done much to reduce the substantial drain upon the Corporation's finances, aided by the improved conditions in the Middle East which affected most markedly the fortunes of Middle East Airlines, but also influenced to some degree those of other associates in the area. There is, however, the problem of Kuwait Airways which was wished upon the Corporation by a former Minister of Transport and Civil Aviation and which last year cost nearly £250,000. Nobody could blame B.O.A.C. if it were to represent very strongly that such substantial losses should be made good by the Government at the behest of which they were incurred. The situation is indeed somewhat analogous to that of British Railways in regard to really unremunerative sections when it was suggested by the Select Committee on Nationalised Industries in its recent report that, if the lines were to be kept open, the Government could reasonably be expected to pay therefor. Still larger losses were incurred by British West Indian Airways and it is hoped that the gradual development of the British West Indies Federation will bring with it more satisfactory arrangements for the financing of operations with strong participation of local capital. It would be unwise, to say the least, to contemplate discarding this particular organisation, in an area where foreign competition is vigorous and only too ready to grasp any opportunity offered to it. The development of new traffic as a result of lowered fares is a matter at the moment for conjecture, particularly insofar as the African routes are concerned. The developments in the Congo and their influence upon adjoining territories may tend to delay the growth of an undoubtedly good potential, but there should nonetheless be a demand for third-class travel from residents in, for example, East Africa who fancy the idea of a home leave which they could not afford at the higher fare levels.

Amortisation of Aircraft

THE threat of having to sell aircraft for nominal sums far below their book values was recorded in the B.O.A.C. report in respect of the Douglas DC7Cs where there was an undertaking to get rid of them after delivery of the Boeing 707s. Their book value is nearly £6 million but the market for them is almost non-existent, due to the arrival in service of large numbers of jet aircraft and the ambitions of even minor airlines to discard propellers. Possible solutions, which would, however, involve their retention by the Corporation, are conversion to freighters—application has been made for North Atlantic freight services but British United Airways as successor to Airwork has such a licence dormant and there is a parallel application by Eagle—or their use on long-term charter operations. Either course would almost certainly involve a smaller loss than outright sale in present conditions. If supersonic aircraft come into service within the next 10 years, as could well be the case, a similar situation is going to arise in respect of the later subsonic jet aircraft. Costing considerably more than the piston-engined types, about which the present concern has arisen, they will stand on the books at a value of the order of £20 million. From that viewpoint alone the prospects are daunting, but equally unhappy results might come if competitors introduced supersonic aircraft and B.O.A.C. had none. Had it not been for the availability of the Comets and their fortunate ability to operate the North Atlantic, which had not been a specification, the introduction of Boeing 707s on the route by Pan American Airways and subsequently by T.W.A. might well have dealt the British operator a severe blow. The popularity of the jets is the basis for the argument that the appearance of the supersonics will lead to a comparable abstraction of patronage from the subsonics, but it may be questioned whether there is any close basis for comparison. The new chairman of B.O.A.C. has asked whether business men really need to save a further four hours on the present flying time from London to New York. He was doubtful whether they did and it seemed reasonably certain that a surcharge would be required.

Costs of Supersonics

ON present indications the economics of the supersonic air liner are indifferent and could add anything from 15 to 50 per cent to the cost of each capacity ton-mile in comparison with the subsonic jets, but it is difficult to judge until the next stage in the supersonic development has been completed. This is the carrying out of a detailed design study and it is obvious that the sooner that work commences the better the prospects for the British aircraft industry. The Government is now discussing the matter with the main groups of aircraft and engine manufacturers but if a race were to develop, and B.O.A.C. would need to win it to remain competitive, then it would be desirable, albeit somewhat unlikely, that the airline should have the machine in eight years' time. If such a schedule is to be fulfilled every week's delay in starting the detailed design study could be vital. Sir Matthew Slattery has two hopes, one more likely of fulfilment than the other. The less likely one is that he can persuade all the other airlines to agree to give 10 years' notice of the introduction of supersonic machines. He is not optimistic but, if the endeavour were to succeed, that would place 1970 as the earliest possible date and make the finance problem of subsonic aircraft a little less acute. Although it would be unwise to indulge in optimism, the second suggestion that the British and United States industries should collaborate in producing a supersonic air liner is undoubtedly attractive. With development costs likely to exceed £50 million and a price per aircraft of between £4 million and £5 million, the saving that should be achieved might well make the difference between providing supersonic travel at a premium and at ordinary fare levels. Admittedly speed of that order may be as much of a deterrent as an attraction and before it is available there is still, in any case, the problem of noise to be overcome. To quote Sir Matthew, "We simply cannot contemplate an aeroplane which makes more noise than those which we are operating today. I do not think the general public, and quite rightly so, are going to stand for it." If we are honest about it we must admit that, apart from unavoidable noise, too many captains are doing their best to stir public resentment by slow climbs away from airports. With vertical take-off aircraft unlikely to be sufficiently developed by that time, it is, indeed, obvious that tremendous endeavours are required if Britain is to keep in the van and achieve an eight to ten year production timetable.

NEWS SUMMARY

A WAGES settlement affecting 18,000 employees on the London Transport railways was announced on August 9. It was agreed between London Transport and the three railway unions and relates the wages as nearly as possible with those of British Railways after increases to conform with the Guillebaud Committee's recommendations.

The Eastern and North Eastern Regions have introduced two new named express freight trains between London and North Eastern England. The northbound train is the Tees-Tyne Freighter and the southbound train the Kings Cross Freighter.

The demonstration Armstrong Whitworth Argosy (G-APRN) was returning to England this week after an 85,000-mile tour of 25 countries in three months. It had recently been in India and Jordan.

On August 9 the chairman of the Biddulph Urban District Council, Councillor F. Reeves, opened a new bus garage in the town for Potteries Motor Traction Co., Limited. It will house 24 Potteries and 16 North Western Road Car vehicles and replaces garages formerly occupied by the North Western and Wells Motor Services.

COPING WITH TRAFFIC CONGESTION

Port of New York Provides George Washington Bridge with Second Deck

ELABORATE SCHEMES FOR APPROACH ROADS AND BUS STATION

THIRTY years ago the George Washington Bridge, the third largest suspension bridge in the world, was under construction for the Port of New York Authority—it was opened to traffic in 1931. Since then it has formed an important link between the northern portion of the island of Manhattan and New Jersey as well as a by-pass for the more congested parts of Manhattan and the Bronx. In 1932, its first full year of operation, the bridge carried 5,500,000 vehicles and in 1959 this figure had risen to 38,446,400 which was considered to be perilously near the maximum capacity of this eight-lane thoroughfare. This situation had, however been foreseen and the original design envisaged the provision of a lower deck when circumstances warranted. A report in 1955 on the joint study of arterial facilities by the Port of New York Authority and the Triborough Bridge and Tunnel Authority weighed in heavily on the subject of the vital need to provide adequate by-pass routes both to north and south of the congested area of Manhattan.

Raising the first structural steel section over the river of the lower deck of the George Washington Bridge on the New York side of the Hudson

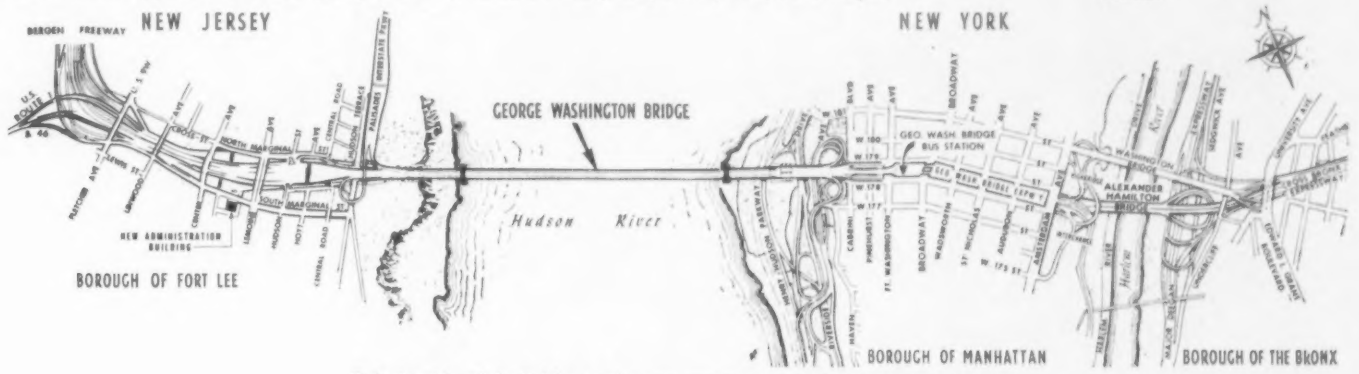
Increasing the capacity of the George Washington Bridge forms part of this scheme for it connects the Major Dagan Expressway leading north to the New York State Thruway and other Westchester and New England main roads and south to the Triborough Bridge. It will be seen that the bridge, important as it has been in its 19 years' existence, will become of even more moment in the future. At the same time it should be appreciated that there is no intention of providing facilities just for their own sake.

New Jersey Improvements

Apart from the work on the east side of the bridge many improvements are being carried out on the western approaches in New Jersey. The present main plaza, as it is termed, where tolls are collected from vehicles will remain more or less as it is, but two new three-lane sunken approach roads to serve the lower level are being built on either side of the main plaza approach. They will have their own toll plazas and the approaches will be connected with the lower level of the bridge by two short tunnels under the existing plaza. The work involves demolition of the old administration building and a new one is being built south of the approach between Lemoine and Center Avenues. New or improved connections are being built between the bridge approaches and four main roads, as well as the Palisades Interstate Parkway, local streets and the new Bergen Freeway. The last is being built by the New Jersey State Highway Department across Bergen County from west to east as a measure to relieve congestion and the Port of New York Authority is paying up to $25 million of the state's share of the cost, as part of the lower level project. All the schemes should be completed in 1962.

The operating basis of the bridge when the lower deck has been completed will be that three of the six lanes thereon will be permanently allocated to traffic in one direction and the remainder to traffic in the other. On the existing upper deck, however, the centre two lanes of the eight will continue to have reversible traffic flow to help in handling peak traffic. When little traffic is using the bridge there will be provision for closing the lower deck. Great care has had to be taken in planning the work to ensure that there was as little interference as possible with the heavy traffic already carried by the bridge and its approaches. At the same time provision was made for bringing into use stretches of new road as they became available. Four lanes of the new George Washington Bridge Expressway will, for example, carry traffic before completion of the other eight lanes, while the hastening of work on the exit ramp from the eastern end of the bridge to the Henry Hudson Parkway and Riverside Drive enabled it to be brought into use on May 27 in time for this year's Memorial Day weekend traffic peak.

Site for tunnels on the New Jersey side of the Hudson

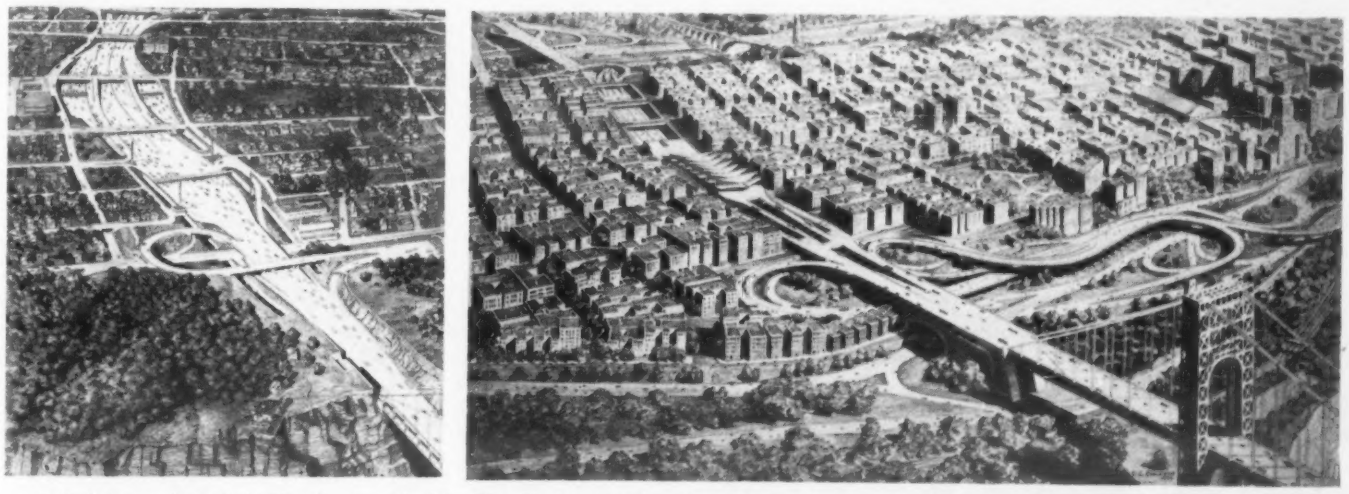


Relationship of the bridge to the new expressways and the new bus station

New Bus Station

Another major component of the scheme is the $13 million George Washington Bridge Bus Station, due for completion in mid-1962. It will be the first example in New York of the work of Dr. P. L. Nervi, the Italian engineer, who was architect of the 1960 Olympic Stadium in Rome. The two-block-long, three-level bus station will straddle the sunken 12-lane George Washington Bridge Expressway between Fort Washington Avenue and Wadsworth Avenue. Foundations for the station have been built at the same time as the expressway retaining walls and are ready.

It will replace and consolidate bus operations now being handled by scattered terminals and kerbside stops in the Washington Heights area, and will furnish New Jersey—New York commuters with convenient modern facilities, including an underground passage to the New York City subway system. At the same time, since it will be connected to the bridge by direct ramps, it should reduce street congestion in the area. When it comes into use nearly 2,000 bus journeys will handle 50,000 passengers daily and well over 200 buses and 10,000 passengers will be accommodated in a peak hour.

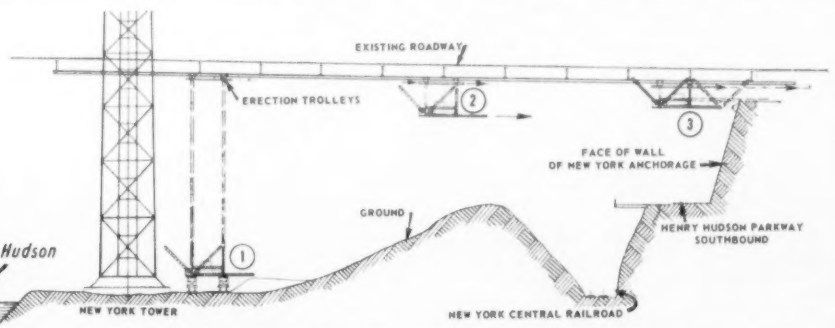


Artist's impressions of the New Jersey and, right, New York approaches to the bridge after completion of the scheme. The wing-like roof of the new bus station may be seen in the New York impression

Three Levels

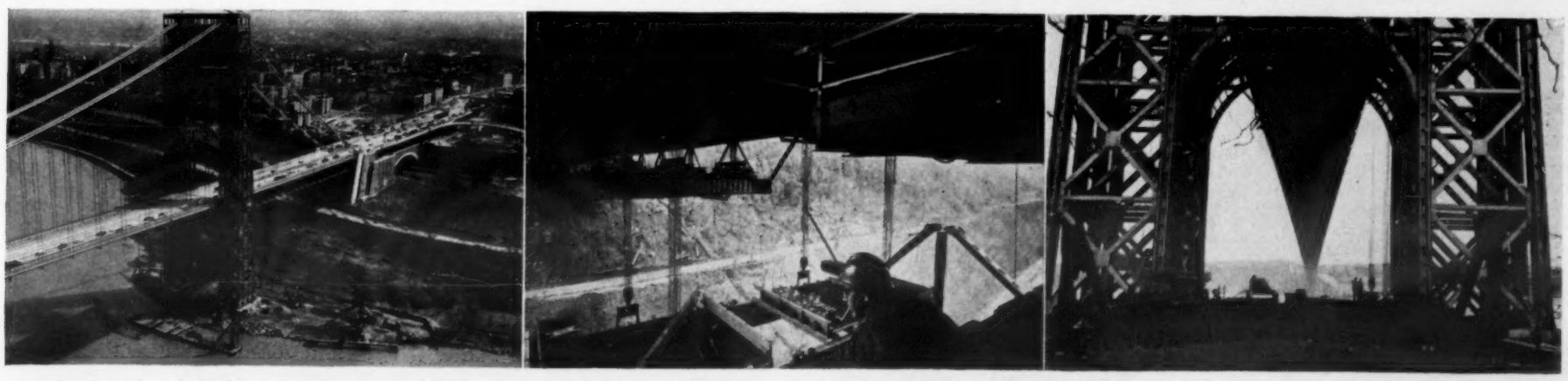
The concrete roof, designed by Dr. Nervi, will comprise 26 triangular sections, 14 of which slope upward from a row of columns in the centre of the building. Each triangular 92 by 66-ft. section will be made of 36 precast concrete panels. The sides of the raised roof sections and of the bus station itself will be exposed precast concrete structural members forming openings to assist ventilation of the bus platforms and the expressway beneath the building. The main three-level bus station will be about 400 ft. long and 185 ft. wide. Bus operation will be on the third level and the main concourse will occupy the floor below. The lowest level will comprise a subway mezzanine at the Fort Washington Avenue end, where it will be below street level, and long-distance bus and coach facilities near the Broadway end at street level. An elevated turning circle and parking

(*Continued on page* 13)



Method of construction of the overland lower deck on the New York side with sections hoisted from the ground and moved into position on trolleys suspended from the bridge

A model of the new bus station with the 12-lane expressway beneath it. The buses are those on the suburban services; the coach platforms are below



Another view of the first over-water structural section being raised on the New York side; a large truss section of the back span seen from the New Jersey tower as it is being lifted into position and, right, the first section for the landward end of the bridge on the New York side

Completed—
a million and a quarter miles between them...

—and still no sign of an overhaul

In 1956 Warrington Corporation stripped down one of their Leyland Titan engines when it had completed 300,000 miles without even the head having been removed. It showed so little signs of wear that a directive was then issued: **"The mileage of Leyland Titans can be extended to well over 300,000 miles before overhaul."** Today, three of Warrington's other Titans, now 11 years old, have totalled 1,262,155 miles with no engine maintenance other than normal injector and lubrication service. And, as they are still going strong—on an average fuel consumption of 9.39 m.p.g.—Warrington are still unable to put a maximum to the Titan's mileage before overhaul.
Neither can we—and we build them. But we do know what others have done, and it's our guess that those Titans have quite a way to go yet.

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with all the features you're demanding

POWER BITE TRACTION
Be it on main roads, by-roads, or no roads the Super Mileage Lug tyre's cross grooves, heavy shoulder lugs and circumferential ribbing will combine to give maximum bite and traction and long safe wear. The dual-purpose Super Mileage Lug helps reduce mechanical maintenance too. Many so-called dual-purpose tyres slip and spin causing undue strain on engines and transmissions. But with the POWER BITE TRACTION of the Super Mileage Lug, this profit-draining problem is practically eliminated.

MORE SKID DEPTH
Deeper non-skid pattern than in ordinary highway tyres gives thousands of miles of sure-footed highway hauling.

SUPER STRENGTH BODY
Super Gum-Dipped, Tension-Dried cords make a really strong, durable body which gives big dividends in tyre mileage and vehicle efficiency.

OUTPULLS AND OUTLASTS any tyre of its kind. Specially designed for on-and-off-the-road service where a large part of the work is off-the-road and particularly severe.

EXPERIENCE COUNTS
45 Factories throughout the world.
Firestone total sales exceed £1,000,000 per day.

DRIVE SAFELY

Firestone TYRES—
consistently good

LORRY—BUS—COACH

Staggered Hours Plea Ignored

AFTER making reductions in services after 7 p.m. to the extent of about two million bus-miles per annum it is doubtful whether any further substantial cuts in services can be made without causing undue hardship or without seriously impairing the efficiency of the services, says Mr. W. M. Hall in his annual report as general manager of Liverpool Passenger Transport Department. The financial outlook for 1960-61 is bleak in view of the £317,000 to be added to the wage bill as a result of the last national award. For Liverpool as with other operators this is the largest single increase yet experienced. Continuing on the theme of efficiency, Mr. Hall notes that there is no scope for reduction of peak-hour services. The fleet is then utilised to the maximum and a plea for consultation from industry on the staggering of hours when the shorter working week came into effect was to all intents and purposes ignored. This seems particularly reprehensible when it is seen that the undertaking has many times re-scheduled bus journeys to suit the convenience of industrial establishments. There was a net deficit in the year ended March 31, 1960, of £40,674, reducing the surplus brought forward from £89,971 to £49,297.

Warrington Route Reorganisation Paid Off

THE bold re-routeing scheme introduced by Warrington Corporation Transport Department at the end of last year is paying off—to the tune of £20,000 a year. The scheme affected no less than 75 per cent of the mileage operated up to that time. A description appeared in MODERN TRANSPORT of December 12, 1959. In his annual report, the general manager, Mr. N. McDonald, who was responsible for the scheme, states that "Financially it would seem that the scheme has benefitted the department at the rate of £20,000 per annum." With services as they were before the re-organisation was introduced, the undertaking was expecting a deficit of about £34,000 in the 1959-60 financial year. Commenting on public reaction to the changes, Mr. McDonald said it generally had not been so great as might have been expected. It was, however, fully expected that adjustments to such a large-scale project would have to be made in the light of experience.

Bus Garage Plans for Stockton

THE Stockton-on-Tees borough engineer has been authorised to prepare plans for a proposed £165,000 bus depot. The premises will include administration block, workshops and a cleaning and refuelling annexe.

Scottish Haulier Acquired

ANOTHER acquisition is announced by Transport (Bristol), Limited, the meat haulier. It is the Cupar (Fifeshire) firm of Muirs Transport, Limited. It is planned to develop Muirs existing business of meat, sugar and livestock haulage. At the same time cold storage facilities at Cupar will be enlarged.

Adapted Dual-Purpose Vehicles

DOUBTS have recently been expressed about dual-purpose vehicles, ostensibly small buses, but with wooden seats and a summons has now been issued against a T.R.T.A. member for using a wooden-seat version of a dual-purpose vehicle without a C-licence. The attitude taken was apparently that the vehicle had been made more convenient for the carriage of goods because a roof rack had been added. This appears to have been the deciding factor.

Complications of a Bus Route

RECONSTRUCTION of Canada Bridge, between Canada Dock and Greenland Dock in the Surrey Docks, set London Transport a real poser. One-way traffic is in operation over the bridge and there are no alternative roads. This called for a complex reshuffling of bus route 82, which at the best of times is liable to disruption from an opening dock bridge. Route 82 runs from Stepney East Station through Rotherhithe Tunnel to Surrey Docks Station and then round in an arc to Brunel Road, Rotherhithe, and is best described as a corkscrew figure "6," with Stepney at the top and Brunel Road terminus at the completion of the stroke. Buses pass this terminus en route and actually cross over their earlier tracks when they pass above and then alongside the tunnel. Short journeys are often necessary because of tunnel and shipping delays.

During the bridge rebuilding, one service of buses runs from Stepney to Surrey Docks Station, turns there and goes back to Brunel Road, clockwise round the Rotherhithe Street loop, over the bridge to the station, thence once more through the tunnel to Stepney. The other service shuttles between Brunel Road and Canada Bridge via Rotherhithe Street, which therefore gets twice as many buses one way as the other. As work progresses revised operations may become necessary. London dockers, never keen on walking, are believed to hold strong views on the inevitable disruption to their normal travel routine.

Last-Tram Date for Glasgow

UNDER present plans, Glasgow Corporation Transport Department will dispense with its last trams in October, 1962; the fleet has already been reduced from 1,200 to 280. The accounts for the year 1959-60 show that there was a deficit of £708,000 on the remaining trams, counterbalanced by surpluses of £731,000 on buses, £31,000 on trolleybuses and £62,000 on the Underground. The overall surplus was thus £116,124, reducing the accumulated deficit to £1,114,152. It was the first for three years and was achieved by eliminating uneconomic mileage. The wage bill for Glasgow was raised £400,000 annually by the recent municipal award.

Ceylon Board Gets New Chairman

ONE of the first acts of the new Ceylon Government has been to appoint Mr. R. T. de Silva chairman of the Ceylon Transport Board. Mr. de Silva succeeded Mr. Vere de Mel who steps down from office. Mr. de Silva was earlier vice-chairman of the board until the advent of the previous government. Mr. de Mel in a message issued to all members of the staff just before he left said he relinquished his duties with the greatest regret at leaving a job well begun but only half done. Whether a commission of inquiry be appointed to probe into the working of the board is the question now uppermost in the mind of the new chairman. Mr. de Silva said that he would discuss the matter with the Minister of Nationalised Services. At a previous meeting of the board, the Government nominee on it, Mr. B. D. Rampala (who is general manager of the Ceylon Government Railway), told the board that it was essential in the national interest to have a thorough probe into its affairs.

Lighter Touch for Green Line Coaches

EXPERIMENTALLY, coaches on Green Line route 711 (High Wycombe—London—Reigate) and the London Transport Routemaster double-deck coach are being repainted in lighter shades of green. Public reaction will be awaited. One repainted RF-class coach has already been in service on route 719. The customary green sometimes takes on a rather dingy appearance as darkening advances with age. Under consideration is a plan for 60 Routemaster coaches to go into service on several routes next year.

Two Bedfords at work in Switzerland; the lefthand one has neat fittings on the special dropside body, the other carries a refrigerated van body panelled in embossed unpainted aluminium alloy

Jam at Teatime

SUMMER traffic congestion in Chester is now so acute, it seems, that a conductor of a bus in a traffic jam was able to walk to a nearby café for a jug of tea; he told he must bring his own jug; after a conference with his driver go to a nearby china shop; buy a jug; go to the café for the tea, then return to the bus, which had meanwhile moved—three feet.

Only Overtime Saves Manchester Services

ACUTE shortage of staff is being experienced by Manchester Corporation Transport Department. Because of this city bus services are "stretched to the limit," according to a transport official. Holidays and staff shortages have cut the department's establishment figure by 700 to 4,100. As a result bus crews are putting in an average of 10 hours overtime a week. A new-style duty roster is to be tried out at Princess Road bus depot. The busmen want an eight-hour day with seven days off a month, one more than at present. The corporation wants them to work 7 hr. 38 min. a day and no change in day-off arrangements. A union spokesman said that the extra day off they wanted was "another step towards our goal of a 40-hr. week made up of five 8-hr. days." The duty roster at Princess Road is to be overhauled. If it is found that the men's plan works efficiently it may be extended to other depots. The gravity of the staff shortage on London Transport bus services was graphically illustrated this week by the revelation on Tuesday evening there were only two buses at work on a short East London route which requires six.

Increased Fares on Ribble System

BECAUSE increased wages and improved working conditions will add £350,000 a year to operating costs, Ribble Motor Services, Limited, has been authorised by the Traffic Commissioners to introduce higher bus fares. The new stage-carriage fares will come into operation today (August 13). On town services, including Carlisle, Kendal, Cleveleys, Fleetwood, Wigan, Chorley, but not on local services operated jointly with Preston Corporation, single fares of 3d. and below will remain unchanged; single fares of 3½d. and above will be increased by ½d.; adult contracts by 6s. 6d. per quarter; children's contracts a corresponding increase. On interurban and country services, single fares of 4d. and below will remain unchanged; fares of 4½d. and above will be increased by 1d.; on return fares there will be a 2d. increase throughout the range; adult contracts increased by 13s. per quarter; children's contracts 6s. 6d. per quarter. At the public inquiry at Morecambe Mr. H. Bottomley, general manager of Ribble Motor Services, gave evidence that wages were now more than four times those of prewar and represented 71.5 per cent of the company's costs per mile operated. On average, however, the increased fares would be only 100 per cent above those of prewar. The date on which higher fares on express services are to be introduced has not been decided.

Bus and Coach Developments

Llynfi Motor Services, Limited, Maesteg, applies for the licences of Mrs. Martha Thomas.

George Ewer and Co., Limited, proposes an express service on Saturdays and Sundays in summer between London and Aldeburgh via Colchester, Ipswich and Saxmundham.

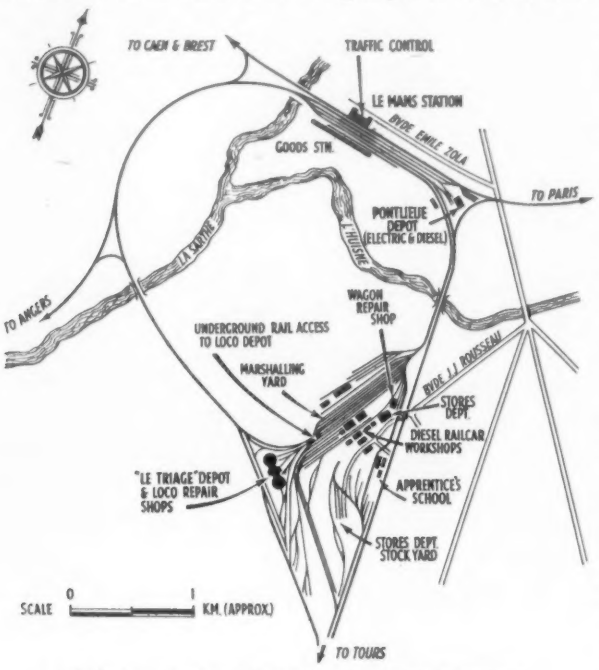
LE MANS—KEY TO WESTERN FRANCE

Steam, Diesel and Electric Traction

MODERN DEPOTS AND WORKSHOPS

IN many ways the modern history of Le Mans, in Western France, corresponds with that of a typical railway town in England. True, it was the former capital of Maine and had a population of 20,000 before the advent of the railway, but its subsequent rapid growth to a town of 120,000 is due mainly to its importance as a centre of railway communications and workshops.

Today it is in certain respects the most important railway centre on the Region de l'Ouest and its activities extend as far as Brest and Quimper—a distance of 400 km. On the operational side interest attaches to the fact that traffic is handled by steam, diesel and electric traction, whilst the main workshops are notable in that they deal exclusively with the repair and maintenance of diesel units. Le Mans is also the location of the main regional stores, a vast establishment covering 60 acres.



Relationship of Le Mans Station to the motive power depots and workshops

Development

The rail service between Le Mans and Paris was inaugurated on May 28, 1854, and nine years later the Compagnie de l'Ouest ceded its original roundhouse depot to the Compagnie d'Orleans and built itself a larger one at the opposite end of the station. At the turn of the century the Compagnie d'Orleans built a new depot at the junction of the lines from Paris and Tours. Eventually all three of these early depots were replaced by the present Triage depot to the south of the marshalling yard, although the site of the last Orleans depot now forms part of the present Pontlieue depot, used exclusively for diesel and electric units.

The carriage and wagon works, now reconstructed for the maintenance of diesel units, was originally built just prior to the 1914-18 war. The marshalling yard was mooted at the same time, but was not laid out until 1921. The stores establishment of today owes its origin to being selected as a suitable site for the storage and distribution of stocks of allied material after 1918. The present buildings on the site date from 1932 when stores depots at Orleans, Tours, Rennes and Saintes were suppressed in order to concentrate the work at one main depot.

Electric Traction

The year 1937 saw the introduction of electric services from Paris and at that time the servicing of electric locomotives and diesel railcars was carried out at the main steam depot. Later this work was transferred to Pontlieue, which was redeveloped exclusively for this purpose. Despite the lapse of 23 years the electrification of the main line from Paris still terminates at Le Mans, and all traffic to the west, as well as to the north and south, is operated by steam and diesel traction, the latter mainly on local services.

In 1946 the work of repairing diesel railcars and locotractors was transferred from Rennes to Le Mans in order to segregate it from the repair of steam locomotives. Finally, the school for apprentices, built in 1919 and destroyed by bombing in 1943, has now been reconstructed on a new site adjacent to the S.N.C.F. sports ground.

Motive Power

Motive power at Le Mans is distributed in two main depots. The electric and diesel units are at Pontlieue and the steam at Triage, so named because of its proximity to the marshalling yard. This latter depot is the largest and has a train crew personnel of 250. It handles the bulk of the freight traffic and most of the main-line passenger workings to the west Its main features are two rotundas with a total of 99 roads off two 75-ft. turntables. These rotundas are centred about a large repair shop capable of major overhauls. Other buildings include the administrative offices and an extremely well-equipped hostel where engine crews enjoy amenities that compare favourably with average hotel accommodation.

The depot caters for both coal- and oil-burning locomotives and has a stock of 1,000 cu. metres of oil fuel and some 50,000 tons of coal which is handled by a modern mechanical coaling plant. Altogether the depot has an allocation of 110 locomotives and of these the principal modern types include 40 141P class compound 2-8-2s, 20 141R class American 2-8-2s, 15 ex Etat Pacifics and half a dozen of the enormous P type 4-8-2s transferred from the Region du Nord after the electrification between Paris and Lille. One other engine deserving of mention is the Chapelon prototype 4-8-4 242A1, the most powerful express steam engine in Europe and capable of developing 4,500 h.p. This machine is now stored and seems unlikely to run again, as apart from its limited route availability it has a bad reputation for spreading the track. In an average month the engines cover 350,000 km., rising to 500,000 during the peak summer period. The total staff employed on repair and maintenance work is over 400. A feature of the depot is that in order to avoid interference with traffic in the marshalling yard, the running lines to and from the depot are taken below ground level and underneath tracks serving the yard.

Pontlieue

The depot at Pontlieue deals exclusively with electric and diesel traction and is equipped to provide servicing and running repairs to diesel railcar sets, diesel shunters, multiple-unit electric sets and the main-line electric locomotives based on Montrouge (Paris). The stock based at Pontlieue comprises five electric multiple-unit trains of the Z3800 series, 22 diesel railcar sets and four diesel shunting engines. Despite this relatively small complement the average number of kilometres worked each month amounts to 275,000 and to this must be added a further 250,000 km. worked by the Le Mans train crews on the main-line electric locomotives based at Paris (Montrouge). Train crew staff at Pontlieue numbers 160, of whom 100 are engaged with electric workings and the remainder on the diesel side. In addition there are about 30 staff employed on maintenance.

Buildings on the site consist of two car sheds, one for electric and the other for diesel units. These are used for inspection and repair purposes, the stock being ordinarily parked in the open on adjacent sidings. Roads equipped with servicing stages are also provided for the turn-round of the electric locomotives that work the main services to and from Paris. Here again the depot has its own hostel, a modern and singularly handsome building that clearly emphasises the importance that the S.N.C.F. attaches to providing its staff with really first-class amenities.

The diesel railcar workshops at Le Mans

Originally created in 1919 and latterly destroyed in 1943, the new apprentices' training centre built in 1956 is a superb example of what can be done to attract youth to an old but virile industry. Both the school and its workshops stand in ideal surroundings near the S.N.C.F. sports arena, and tree-lined approaches edged with flowering shrubs set off the whole establishment in a most attractive manner.

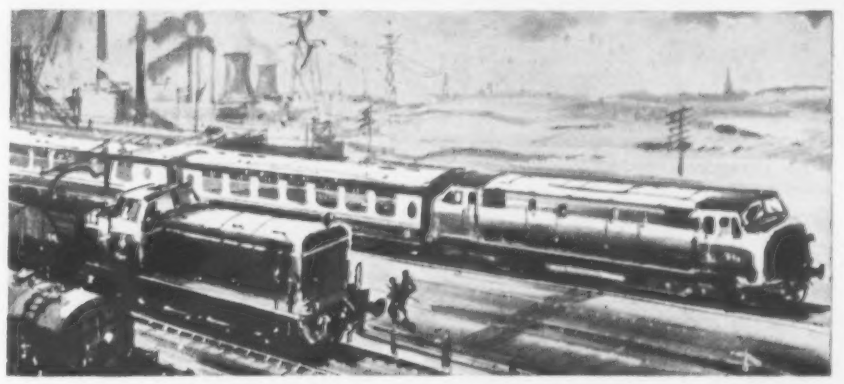
Boarding accommodation is provided for 88 pupils. Training courses last for three years with the 90 pupils divided into three annual groups. There is also a course in advanced theory for 30 selected older scholars. The school is staffed by 15 masters and monitors.

Workshops

The workshops at Le Mans employ a staff of 900, with a further 50 in the wagon repair shop, which is a separate establishment. The work for which the factory is responsible consists mainly of heavy repairs and alterations to diesel railcars of Renault manufacture and having 150- and 300-h.p. engines. This work on what is generally termed "Materiel Moteur" includes a large number of engine units sent in for repair and altogether represents about 80 per cent of the total workshop production. The other 20 per cent is represented by accidentally

(*Continued on page 6*)

POWER SECURITY THAT IS **PAXMAN**



What is there in choosing the right diesel for a locomotive? Excluding the first essentials of engine power, speeds and size, several aspects come under the critical eye which is always looking for higher standards . . . advanced design, superior performance, operational economy, ease of maintenance. But the most vital factor of all is POWER SECURITY . . . how will it behave over long-term service? . . . what will be the ratio of operational and non-operational hours?
The only assurance of this is in the evidence of past service. In the wide range of PAXMAN rail-traction diesels there's *the right* unit for every conceivable shunting or main-line locomotive . . . a British-designed-and-built power unit which has been proved supreme *in every aspect*, through years of reliable service in railway systems throughout the world.

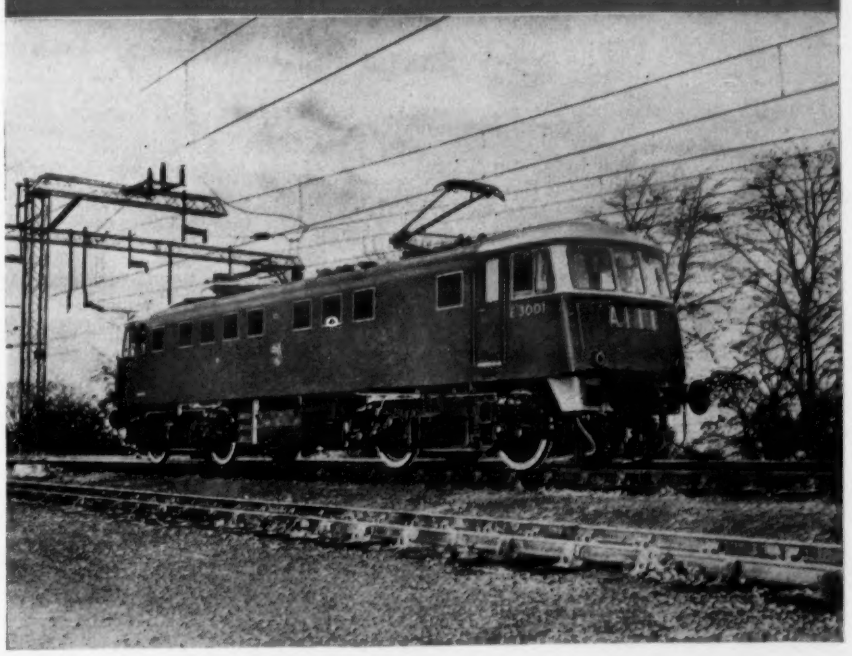
PAXMAN diesels

7" BORE (120-1000 b.h.p.), 9½" BORE (750-2300 b.h.p.) AND VENTURA (1000-1870 b.h.p.)
FOR ELECTRIC, MECHANICAL OR HYDRAULIC TRANSMISSIONS

Paxman rail-traction diesels, which range from 4 to 2300 h.p. have an exceptionally high degree of parts interchangeability within each wide power range . . . they are also backed by a first-class spares service.

DAVEY, PAXMAN & CO. LTD., COLCHESTER, ENGLAND. a member of the HUSTON Group

AEI deliver the FIRST 25 kV A.C. LOCOMOTIVE for BRITISH RAILWAYS



A total of 35 — 3300 h.p. 25 kV A.C. locomotives, together with 40 sets of locomotive electrical equipment have been ordered from AEI by British Railways.

All enquiries should be addressed to the local AEI office or direct to—

AEI Associated Electrical Industries Limited
Traction Division · Trafford Park · Manchester 17
Manchester Rugby and London

K/T001

Le Mans—Key to Western France

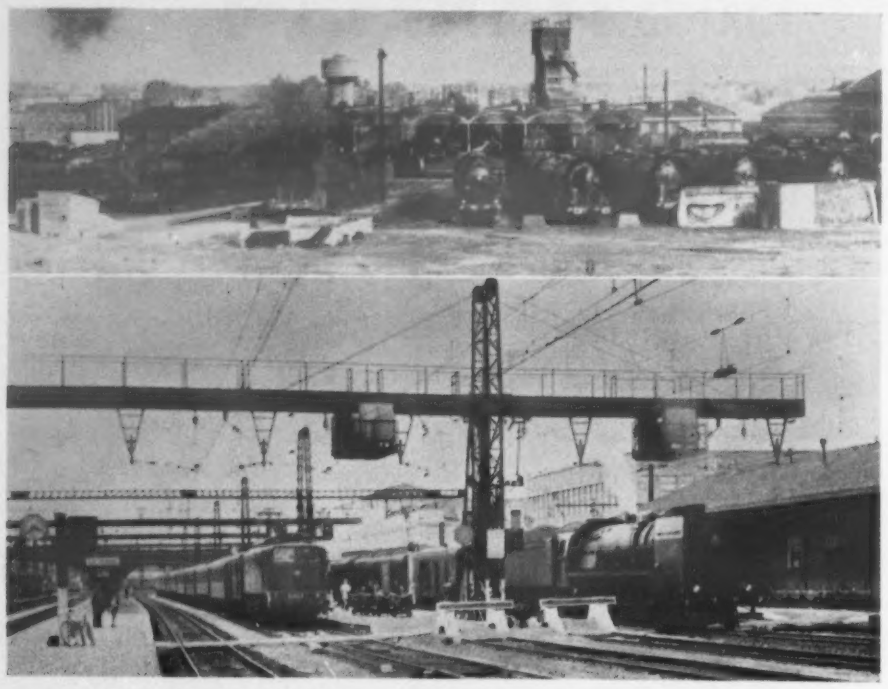
(*Continued from page 5*)

damaged vehicles, the repair of locotracteurs (small diesel shunters) and equipment sent in by the stores department.

In 1956 the total output was 112 major overhauls to diesel railcars, 457 renovations to 300-h.p. engines, 29 to 150-h.p. engines, 41 to others and 654 repairs to transmissions. Apart from mechanical maintenance the works undertake all repairs to bodywork, including the interior fixtures. The time allowed for a railcar overhaul is three weeks and two weeks for an individual motor.

Situated alongside the line from Tours, the stores and materials department at Le Mans is the largest on the Region de l'Ouest. It extends over 60 acres and is served by 18 km. of sidings and 3 km. of roads. Some 20,000 tons of stores are handled each month, requiring the movement of 1,100 wagons. The number of articles held is in the region of 16,000. Its function is to serve the needs of the region (and in some cases, such as spare parts for Renault motors), the whole of the S.N.C.F. Among

(*Continued at the foot of next column*)



One of the rotundas at Le Mans steam depot showing American and French postwar 2-8-2s. Below, Le Mans Station with a 2D2 electric locomotive on a Paris-bound express, and a P-class 2-8-2 uncoupling from a train just arrived from the west

AIRPORT FIRE-RESCUE

Thornycroft Launch for Hong Kong

A MAIN civil airport built on a causeway raised from the seabed, such as that at Kong Kong, calls for unconventional fire-fighting and rescue equipment. The Hong Kong Government Civil Aviation Department has met its commitment in this field with a new launch built recently in the Singapore yard of John I. Thornycroft and Co., Limited. The design was the result of close co-operation between the Hong Kong Government Marine and Civil Aviation Departments and the Singapore and U.K. design offices of the builder. The hull is of hard-chine form planked with double-skin teak on timbers of chengal; it is 60 ft. in length with beam of 14 ft. 6 in. and draught of about 4 ft. 6 in.

The accommodation is comprised of a forepeak for the stowage of loose gear and reached from the passenger space by a watertight door in the bulkhead. In the passenger space seats are provided on each side for a total of some 20 persons and overhead four hanging stretchers are arranged on each side. A hinged-leaf table is fitted on the centre line and at the after end a toilet fitted with washbasin on the port side and a small galley on the starboard side.

A bulkhead separates the passenger space from the engine-room, in which are installed three Thornycroft-Rover Meteorite diesel engines with Thornycroft B-type reverse and 2 to 1 reducing gears arranged to give handed rotation of the wing propellers. A single-lever control unit at the helmsman's position provides for the combined operation of throttle and gear on each engine. With the three engines running at their collective continuous rating of 645 b.h.p. the boat exceeded its contract speed of 22 knots; at the collective maximum rating of 840 b.h.p. over 24 knots was attained with additional equipment on board bringing the trial displacement up to 1½ tons in excess of the contract data.

A closed-circuit fresh-water cooling system is fitted with internal heat exchangers, all mounted integral with the engines, which also have ¾-kW dynamos and bilge pump fitted. Battery stowage is provided on each side of the engine room, and on the port side is a workbench adjacent to the main access hatch and ladder. A 1½-kW 24-volt generating set driven by an air-cooled Enfield diesel engine is installed at the aft end and provides power for

(*Continued from previous column*)

the major items dealt with is timber, brought to the depot as logs and then cut and stored for distribution.

In addition to the extensive warehouses in which much of the stock is stored, there is a vast stock-yard containing the heavier and less perishable materials, such as rails, bridging and building materials, chairs, sleepers and cranes. This area is termed "le parc du matériel fixe" and apart from stocking raw materials and equipment it serves as a kind of clearing house for the disposal and re-employment of worn equipment. On this count alone the disposal of ferrous metals amounts to 60,000 tons annually.

Today the most impressive feature of Le Mans as a railway centre is its modernity. Everything suggests postwar practice, and whilst this undoubtedly owes much to the fortunes of war, it is none the less a matter of national pride that the S.N.C.F., as a great publicly-owned undertaking, can, and indeed does, set an example to private industry.

The new launch with all foam monitors working while undergoing trials

charging the main batteries and feeding lights, fans, radio and the starter motors of the Rover gas-turbine fire pumps as well as the main engines.

Rescue Equipment

Aft of the engine room is the ambulance room in which are slung nine stretchers, three on each side and three in the centre. They are suspended in spring stirrups with stabilising wires from the deckhead to the floor. At the forward end and to starboard is an enclosed toilet. Steps at each end give access to the deck through hinged hatches and a plastics panel in the roof adds to the natural lighting of the compartment from Beclawat full-drop windows on each side. A feature of the rescue equipment is a lifting platform on the transom devised by the builder to assist in bringing casualties aboard. The platform is fitted to move up and down on guide rails so that any person floating unconscious in the water can be easily pulled on to the platform when it is fully submerged, that is flush with the bottom of the boat, and then be hoisted up to the aft deck level, where they can be brought inboard on to a stretcher.

In practice it was found that with one man at each of the winding handles it was possible to lift a casualty on the platform together with two attendants standing outboard of the chain at each end. Other rescue equipment includes a scramble net carried on each side of the vessel about amidships and a 20-man Elliot inflatable life raft on each side of the roof of the ambulance room.

Wheelhouse

The wheelhouse has all-round vision provided by several windows. In front is one of opening type and another is fitted with Kent Clearview screen, the remainder being fixed. All side windows are of full-drop opening type. The steering wheel in the centre with compass in front has the single-lever engine controls on the port side and the instrument panel above. The chart table is on the starboard side and the switchboard to port, along with the main engine instrument panel and a folding seat for the duty engineer on watch. A stairway behind the helmsman leads down to the passenger compartment and there is a hatch to the engine room. A radio transmitter-receiver unit is fitted in the space under the chart table, arranged to work in the airport radio network.

At the aft end of the wheelhouse double doors lead to the deck, of which a section over the engine room is made portable to facilitate the unshipping of the engines when required for overhaul. On the wheelhouse roof a pulpit is fitted for the lookout and, to assist the operator of the twin monitors fitted here, a Francis searchlight and a signal mast are also provided.

Fire Fighting

The fire-fighting equipment consists of two Rover gas-turbine fire pumps each capable of pumping 500 g.p.m. at 100 p.s.i. These are arranged for pump induction of Pyrene foam compound and are coupled to twin foam monitors fitted respectively on the roofs of the ambulance room and the wheelhouse. For discharging forwards, two Y pieces with suitable lengths of hose and portable branch pipes are also provided so that a carpet of foam can be projected forward when advancing into an area of water covered by burning petrol. Foam compound is carried in two 150-gal. tanks fitted under the spar seats on each side aft of the wheelhouse. The sea-water supply to the pumps comes from two standpipe sea inlets in the engine room. A Stuart Turner centrifugal pump driven by a 24-volt motor is fitted in the engine room and piped for topping up the fuel tank of each gas turbine.

The operation of the Pyrene fire-fighting equipment on trials was found to be most satisfactory, the forward foam monitors in particular demonstrating their effectiveness for approaching a blazing aircraft and quelling the flames, so enabling the launch to get close in quickly and rescue passengers. At the same time spray thrown out from the roof monitors wets the forward parts of the boat and so protects them from possible fire damage. The vision of the helmsman is unimpaired owing to the effective Clearview screen.

As to the matter of ventilation aboard, Thornycroft's long association with tropical conditions has resulted in adequate provision of opening windows and natural ventilators reinforced by positive ventilation provided by a number of Airmax axial-flow fans.

Important announcement about ANTIFREEZE

FOR ALL FLEET OWNERS AND MUNICIPAL AUTHORITIES

4 TYPES of ANTIFREEZE

Embracing all the latest
BRITISH STANDARDS SPECIFICATIONS

AND WHEN TO USE THEM

1 *British Standards Specification* 3151 *(Type B)*
Inhibited with Sodium Benzoate and Sodium Nitrite. It is an excellent general purpose product and experience has shown that it affords protection to cast iron, mild steel and other metals normally found in a cooling system. It is specially recommended by us for use in Diesel or Heavy Duty Petrol engines.

2 *British Standards Specification* 3152 *(Type C)*
The inhibitor used is Sodium Tetraborate, commonly known as Borax. This affords good protection to cast iron against corrosion and this type is quite good for cast iron systems, such as heavy duty diesels. It does not afford the desired degree of protection to non-ferrous metals and therefore it is not recommended by us for use in engines which contain alloy components.

3 *British Standards Specification* 3150 *(Type A)*
Inhibitors used are Triethanolamine Phosphate and Sodium Mercaptobenzothiazole. This Specification is identical to DTD. 779. It is generally suitable for engines running under relatively light service conditions and in engines containing large amounts of aluminium alloy and other non-ferrous components. It is not recommended by us for heavy duty diesel engines or engines in which a high amount of turbulence in cylinder heads etc., is encountered.

4 *HOLTS ANTIFREEZE*
An "all-purpose" Antifreeze that has been especially developed by Holts. It is in fact a combination of the advantages of B.S.S. 3150, with the buffering action of B.S.S. 3152. It is particularly suitable for the modern automobile engine which contains a wide variety of metals, including aluminium. Where a Fleet owner operates a variety of vehicles it is recommended by us for universal use except on the most Heavy Duty Diesel types of vehicles where B.S.S. 3151 is recommended with the alternative of B.S.S. 3152.

N.B.—*All four types are based on Ethylene Glycol to B.S.S. 2537 and give protection against complete solidification down to —3°F (20% solution) or down to —18°F (25% solution)*

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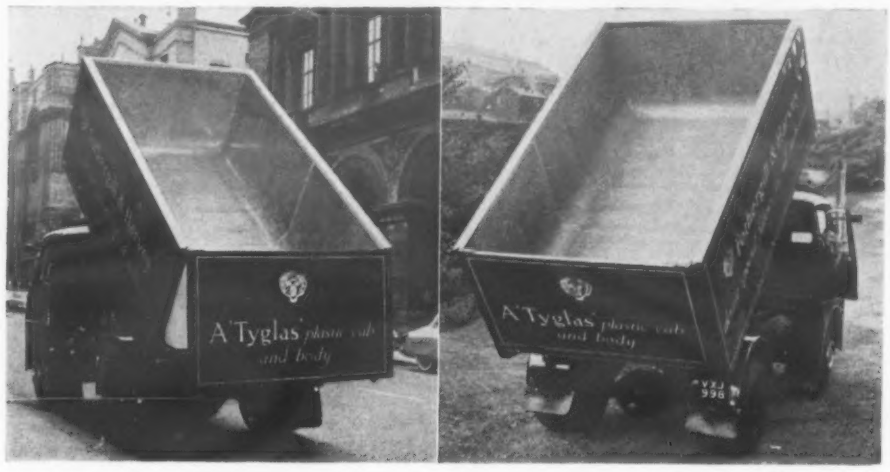
HARD-WEARING PLASTICS BODY

Fothergill and Harvey Experience

AS we recorded at the time, in June, 1958, Fothergill and Harvey, Limited, put into service what was believed to be the first coal tipper ever to be constructed from glass-reinforced plastics. The reinforcements used in the 6-ply laminate were Fothergill and Harvey's own Tyglas woven rovings and Tygamat chopped strand mat. The tipper started its career at Gale Mill, Littleborough, and since 1958 it has covered 70,000 miles, shifting 90 tons of highly corrosive washed smalls per week, from pithead to works boilerhouse bunkers, an approximate total of 90,000 tons. In addition it has moved coal from reserve stocks to the boilerhouses and carried glass waste loads from Harvester Mills, St. Helens, to Rochdale Corporation tip.



Unretouched photographs of Tyglas-reinforced plastics tipper body when first produced and, right, after two years arduous work described in the text

Two Years Hard Use

After two years hard labour, the tipper has come through with flying colours despite the sulphur present in washed coal and the highly corrosive chlorine from the colliery washing plant coupled with the abrasive action of the coal during loading, carrying and tipping. It is said to be virtually as good as new, inside and out, with no signs of corrosion or abrasion. It is believed that the Tyglas-reinforced body has stood up to this harsh treatment far better than would one of more conventional design. Should wear ever take place, however, it is worth noting that a simple and cheap application of resin to the inside body surface will prolong its life indefinitely.

The tipping body, designed and constructed by Holmes (Preston), Limited, is fitted on a short-wheelbase E.R.F. chassis, which has proved to be extremely reliable. The internal measurements of the body are 12 ft. 6 in. long, 7 ft. 6 in. wide and 4 ft. 6 in. deep. It is mounted on an alloy base and equipped with underfloor tipping gear. In addition to complete resistance to corrosion and abrasion, this type of body has other important advantages; the payload capacity has been considerably increased, the body and the cab — also made from Tyglas reinforced plastics—together weigh only 11 cwt., a considerable reduction compared with bodies made from conventional materials. Also the smooth contours of the body result in a remarkably clean tip; to quote Fothergill and Harvey's chief engineer, "it would be difficult to find 9 oz. of coal left in the body after tipping the 9-ton load."

Considerable economies are thus apparently achieved with this type of design; body repair bills are non-existent, man-hours need not be wasted in ensuring that the body is completely empty, wear and tear reduced as shunting is not necessary to release load, and time is saved by quick tipping. Another point worthy of mention is the almost complete absence of body rattles and other noises which sooner or later seem to obtrude on most vehicles, due to the excellent insulation properties of glass-reinforced plastics.

UPRATED TYPE 2 LOCOMOTIVE

More Powerful Mirrlees Diesel

AMONG orders received during 1960 by Brush Electrical Engineering Co., Limited (a member of the Hawker Siddeley Group) is a further batch of 46 Type 2 diesel-electric locomotives for British Railways, bringing the total number of Brush Type 2 locomotives ordered to 226. Well over 100 of these are already in service and are being worked extensively on the Great Eastern, Great Northern and London, Tilbury and Southend lines of the Eastern Region.

Earlier locomotives in the series were rated at 1,250 h.p., but the latest locomotives will generally be powered with the Mirrlees JVS12T engine, rated at 1,365 h.p., while a number of them will have the latest version of this engine which, with oil-cooled pistons, is rated at 1,600 h.p.

The locomotive division of Brush Electrical Engineering at Loughborough, supported by the traction generator and motor divisions and the associated Mirrlees engine company at Stockport, is maintaining a regular output to British Railways of two of these locomotives each week.

BOND RANGER VAN

Economical Delivery Vehicle

CLAIMED to be Britain's most economical light van, with a fuel consumption of 85 m.p.g. of petroil, the Bond Ranger was announced this week. As a three-wheeler, the Ranger qualifies for an excise licence rate of £5 a year, compared with £12 10s. for a four-wheeler, and low-cost insurance terms are available through the manufacturer, Sharps Commercials, Limited, Preston, Lancs, maker of the well-established Bond Minicar on which the Ranger is based. Price of the new van in primer is £295.

The vehicle is powered by an air-cooled 250-c.c. Villiers two-stroke engine and three-speed (no reverse) gearbox mounted in unit with the single front wheel, which it drives through chain and sprockets and which has a steering lock in each direction of 90 deg. Although this gives unusual manoeuvrability and ability to get out of confined spaces often without reversing, Siba engine-reversing equipment is offered optionally. The front wheel is mounted on a trailing arm with coil spring and telescopic damper suspension and independent bonded-rubber-mounted units are used for the rear wheels. All wheels, which are equipped with 4.00—8 tyres, are equipped with internal-expanding brakes operated by rods and cables.

Loading the new 31-cu. ft. Bond Ranger Van

Integral bodywork comprises steel framing, stressed aluminium panelling to waist level and reinforced moulded plastics top. Overall dimensions of 11 ft. length, 5 ft. width and 5 ft. height give a load capacity of 31 cu. ft., accessible through a hinged glazed panel in the back or the side doors. Standard equipment includes 12 volt starting, lighting and signalling equipment and 3-gal. petroil tank. Two-colour finish painting costs £4 10s. extra. Control is by conventional pedals and levers. Top speed is said to be 55 m.p.h. and cruising speed 45 m.p.h.

PROMOTIONAL DOUBLE-DECKER

London Bus for Swedish Firm

ONE of the older RT-type London Transport double-deck buses, which has completed 20 years' service on London streets, was recently purchased for mobile exhibition purposes by a Swedish concern, Svenska Cellulosa AB, and has now been shipped to Sweden. Initial preparation for its future programme of visits to the main distribution centres of Scandinavia has been done in this country and although on arrival at Sundsvall, the company's fibreboards division plant in northern Sweden, there will be extensive conversion of the interior, as much as possible of the familiar outward appearance will be retained.

A P.L.A. floating crane was used to lift the ex-London bus aboard ship for its journey to Sweden

Svenska Cellulosa is Sweden's largest firm specialising in processed timber products of all types, many of which are familiar to British users through the London company, Martin Olssen (Fibreboards), Limited. The thought that a London bus would make an ideal exhibition vehicle for his company's products occurred to the sales manager of Svenska Cellulosa when he found himself caught up in a traffic jam in central London in company with several buses during a recent visit.

The Goodyear Tyre and Rubber Co. (Gt. Britain), Limited, has opened a new branch headquarters at 308-312 Balham High Road, London, S.W.17, which will serve as headquarters of the company's southern division. The telephone number is Balham 0181.

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the phenomenal 91 b.h.p. six-cylinder with porous chrome bores.

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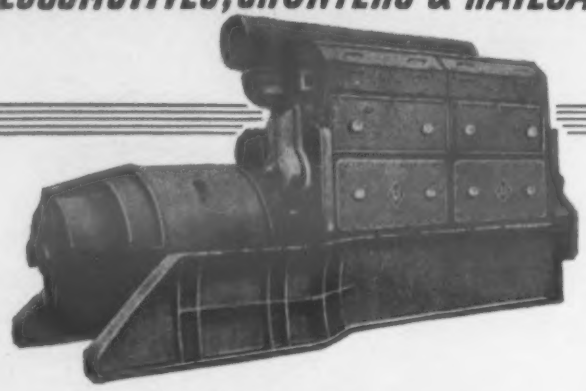

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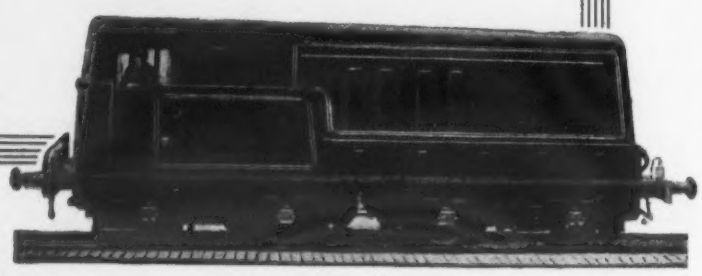

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NEWS FROM ALL QUARTERS

Tyneside Station

Passenger facilities will be withdrawn on and from September 12 from St. Anthony's Station, on the Newcastle—Tynemouth via Riverside branch of the North Eastern Region.

Spectacular Tram Crash in Vienna

Eighteen persons were killed and 104 injured in a rush-hour tram crash in Vienna on August 2. It resulted from a violent collision and overturning after a downhill runaway. In addition to trams a car and a lorry were trapped in the collision.

Lambeth North Underground Station

It is planned to rebuild Lambeth North Underground station, in Westminster Bridge Road, incorporating it within a new office block. Planning permission is being sought from the London County Council.

Surcharge Proposed for Unremunerative Lines

The North-Western Area Transport Users Consultative Committee is to seek a legal ruling on whether train passengers using small railway stations running at a loss can be asked to pay a surcharge on fares to help to keep them open. The proposal was put to it by an industrialist and the view of the Central Transport Consultative Committee is to be sought.

Metropolitan Line Electrification

Warning notices have been put up along the line to the effect that the London Transport Metropolitan Line is being electrified between Rickmansworth, Amersham and Chesham from August 14 in preparation for the introduction of public services on September 12. Notices were sent to local authorities so that schoolchildren could be told of the new danger before their summer holidays commenced.

More Traffic on Benguela Railway

Traffic on the Benguela Railway for the first six months of this year showed a marked increase on the comparable period of 1959. Passenger traffic rose from 855 to 902 ton-km., local mineral traffic from 34,793 to 238,268 ton-km. and other local traffic from 237,496 to 240,295 ton-km. The transit traffic showed a rise of 71,000 ton-km. from 228,101 to 297,411 so far as mineral traffic was concerned. Revenue rose from the equivalent of £2,445,968 to £3,292,623 and working expenses in Africa from £1,470,903 to £1,755,825 so that net operating receipts were £551,733 higher at £1,536,798.

Elevated Birmingham Road

An elevated highway two miles in length is proposed by Birmingham Corporation to run above the main Coventry Road from the city boundary at Sheldon to Yardley. Fast traffic to and from M1 will use the elevated road, leaving the existing carriageway (barely wide enough for four lanes) for local movement. Coventry Road is both a residential and shopping thoroughfare and the proposal is meeting with strong opposition from householders who visualise heavy traffic speeding along day and night on a level with their bedroom windows. The eight garage owners on the affected stretch of road anticipate a considerable loss.

Currency Exchange at Munich

A new foreign currency exchange opened at the principal Munich railway station, and manned from 6 a.m. to midnight, is claimed to be able to dispense or accept the currency of 80 countries.

U.I.C. Markings for Goods Wagons

It has been decided by the International Railway Union (U.I.C.) to introduce completely uniform marking of railway goods wagons within Europe as from July 1, 1964. Wagons of the individual railway administrations in Europe started introducing new signs as part of the U.I.C. plan on July 1 this year.

Future of Eastleigh Works

The British Transport Commission has given reassuring news about the future of Eastleigh railway works in a questionnaire returned to Eastleigh Borough Council. The Commission anticipates that there will be little change in the numbers employed in the locomotive, carriage and wagon works after 1963, compared with present numbers, and considers that in other departments the minor changes due to the modernisation plan will not affect the total number employed.

Leicester Suffers from M1

Leicester's traffic problems are said to have become more acute since the M1 came into use. Vehicles from the motorway pass through the city and add to the congestion of the central area. They include heavy lorries travelling to and from Nottingham and the north and the situation is putting extra strain on roads already in need of relief. On one recent Friday evening 168 Leicester City Transport buses missed their scheduled trips because of the volume of through traffic.

Railway Staff Deficiencies

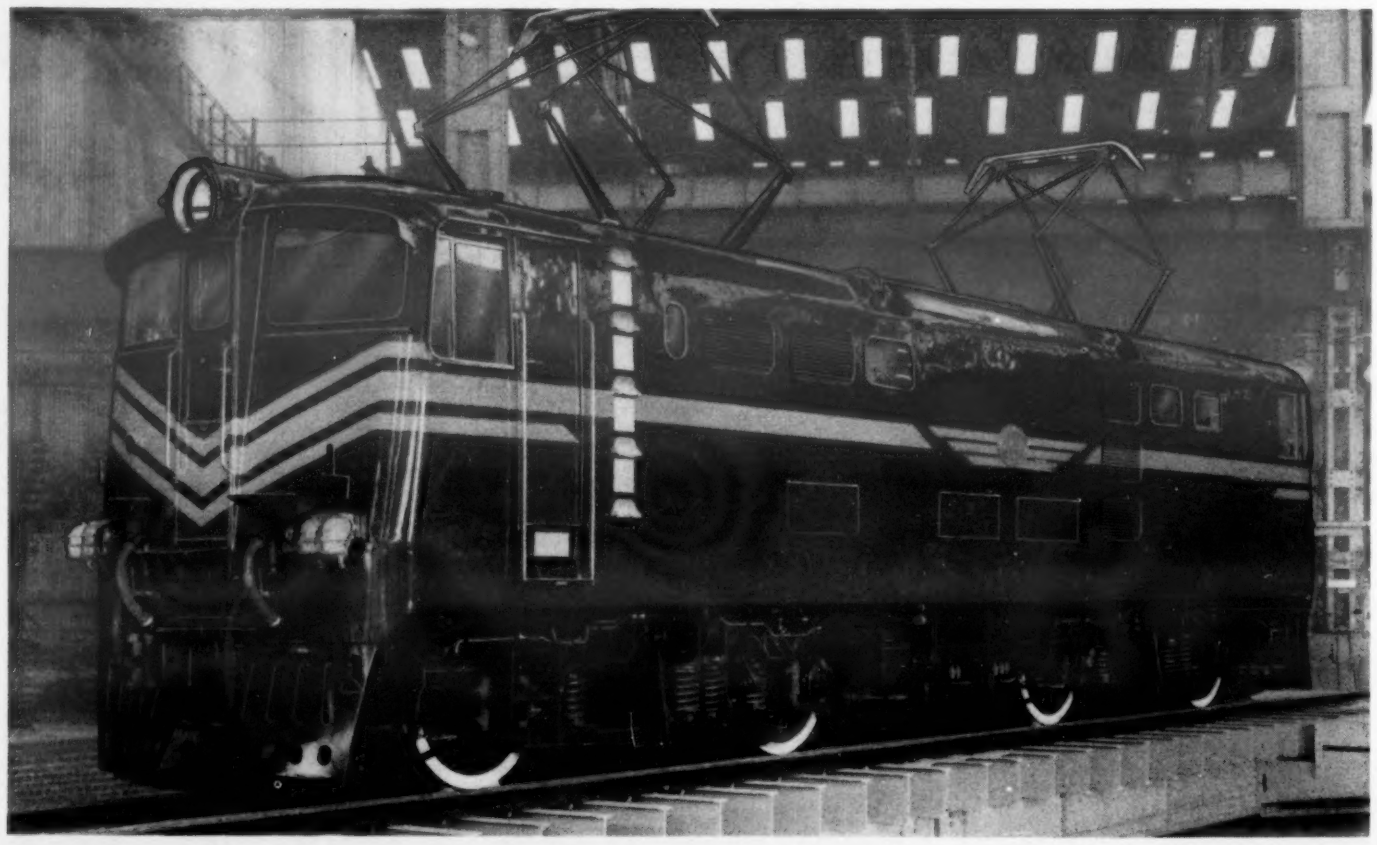
The Western Region of British Railways, which is curtailing services on three lines in Berkshire and Buckinghamshire owing to staff shortages, now has the following shortages in the London district: Firemen, 207 (22 per cent below establishment); goods guards, 91 (31 per cent); and passenger guards, 22 (7 per cent). The Western and London Midland regions are both having serious staff difficulties in the Midlands. The Eastern region is short of 1,241 in key operating grades, compared with 947 in March. The difficulties are worst in London and Sheffield. [Editorial comment on page 1.]

Theatreland Parking Meter Scheme

The Minister of Transport has approved in principle the Westminster City Council application for an order and regulations for a parking meter scheme for the St. James's, Haymarket and Leicester Square areas. The scheme will be brought into operation by December 1. It provides for about 810 meters in an area bounded on the north by Piccadilly, Coventry Street, New Coventry Street, Leicester Square and Cranbourn Street, on the east by St. Martin's Lane, St. Martin's Place, and Trafalgar Square, on the south by Charing Cross, Spring Gardens, Carlton House Terrace, Carlton Gardens, Pall Mall, and Cleveland Row, and on the west by Queen's Walk.

35 type 5.E.I. Electric Locomotives are being manufactured by Metro-Cammell for The South African Railways.

(Main Contractors A.E.I. Ltd.)



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COMMERCIAL AVIATION

Record Revenue for K.L.M.

MORE SWISSAIR FREIGHT

FOR the first time in its 40-year history, K.L.M. (Royal Dutch Airlines) operating revenue for any 12 months period has exceeded £50 million. The company reported an operating revenue of £53,678,500 for the 12 months ended June 30, which was an increase of 12 per cent on the year ended June 30, 1959. Net earnings for the year amounted to £1,400,000. This compared with £1,250,000 for the previous 12 months. In the second quarter of 1960, K.L.M. showed a new peak in total operating revenues of £14,535,000 which brought net earnings to £464,000, against a total operating revenue of £10.9 million and a net loss of £714,000 for the first quarter of this year, and operating revenue of £13,928,000 and net earnings of £570,000 for the second quarter of 1959. Results for the 12 months to June 30, 1960, were after charges of £600,000 incurred in introducing new jet equipment, tax credits of £1 million and a profit of £570,000 on the sale of obsolete aircraft. During the first half of 1960 K.L.M. also incurred higher operating costs in its current account due to the expenses of its fleet expansion programme, while in the face of general wage increases in Holland which took effect in April the airline was forced to absorb higher operating expenses. Nevertheless the gain of 11 per cent in operating revenues for the first six months of 1960 exceeded the 9 per cent increase in operating expenses other than depreciation charges which rose by 17 per cent.

Dublin Airport Traffic

In the quarter ended June 30, aircraft movements at Dublin Airport totalled 9,078 of which 7,105 came within the air transport category. Passengers handled numbered 188,230 and freight amounted to 3,818.5 tons.

S.A.S. DC8s Through Prestwick

On August 17 Scandinavian Airlines System will introduce Douglas DC8s on its Copenhagen—Prestwick—New York service. They will operate weekly in each direction until September 6, whereafter the frequency will be increased to four flights a week for the remainder of the summer and winter seasons.

Swissair Freight Traffic Grows

In the first half of 1960 Swissair freight traffic continued to show a steady upward trend; freight ton-kilometres performed totalled 13,030,000, an increase of 16 per cent over the figure of 11,255,000 for the same period last year. Total capacity offered by the airline in the same period was 100,147,000 ton-km., or 6 per cent more than the 94,833,000 ton-km. offered during the first half of 1959. The largest increase was recorded on the Middle East sector, where freight traffic rose by 65 per cent. To North and South America, it rose by 13 per cent and 19 per cent respectively; a 7 per cent increase was recorded both in Europe and to the Far East.

North Wales Wants Services

The North Wales District Committee of the Welsh Board of Industry is urging the necessity for a North Wales air service if its industrial and tourist trade is to be developed. One member of the board, Mr. Quinton Hazell, pointed out recently that several factories had gone up in North Wales and other concerns were considering establishing industries in the area, but overseas buyers wanted to be able to reach a factory in the shortest time possible. It was, he said, a ridiculous state of affairs when the train journey from London to North Wales took longer than the flight from New York to London. The committee was concerned that North Wales with its area of 4,000 square miles had not a single civil air service.

Electra Modification Programme

The Lockheed Aircraft Corporation recently announced a modification programme for its turboprop Electras to overcome a structural weakness. The aircraft have been flying at reduced speeds since an Electra of Northwest Airlines crashed near Tell City, Indiana, on March 17. The first strengthened Electra will be ready for tests and certification by the U.S. Federal Aviation Agency by November 1, and the entire fleet of 134 Electras is expected to be modified by the middle of next year. The programme will cost $25 million (£8,900,000) and the announcement said that Lockheed has reached an agreement with 10 of the 13 airlines using Electras, and talks were going on with Western, National and Qantas, on the subject of payment for the modification.

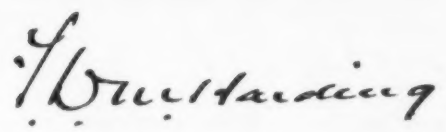
Clearing House Business Waxes

The International Air Transport Association has reported a 33 per cent increase in international airline transactions settled through its Clearing House in London for the first quarter of this year. Total clearance for the quarter was $259,266,000 (£92,494,000) as compared with $195,326,000 (£69,516,000) for the first three months of 1959. This large increase in clearance is partially attributable to a rearrangement of clearing procedures by two members which affects any comparison between the 1960 and 1959 clearances both through the I.A.T.A. Clearing House itself and its interclearance with Airline Clearing House Inc. (ACH) in the United States. I.A.T.A. estimates the normal increase in clearance through its clearing house at about 24 per cent for the quarter. The necessity for cash payment was eliminated for 88.6 per cent of all transactions cleared during the first three months of 1960.

P.A.A. Cargo Record

Pan American World Airways carried more than 8,000,000 lb. of cargo across the Atlantic during the first six months of 1960—an increase of nearly 50 per cent over the comparable period last year according to Mr. Willis G. Lipscomb, vice-president, traffic and sales. In carrying 8,187,960 lb. of cargo, Pan American set up a new record for this route. Cargo carried westbound to the United States showed an increase of 76 per cent and totalled 4,302,056 lb., while eastbound cargo totalled 3,903,024 lb., an increase of 29 per cent over the previous year. Pan American also established an eastbound cargo record during the week ended July 2 when it carried 138 tons of cargo to Europe. This included 177,100 lb. of air freight aboard all-cargo aircraft and nearly 100,000 lb. in the cargo compartments of passenger aircraft. The peak month in the first half of the year was March when P.A.A. established a new transatlantic record for commercial carriers by transporting 1,569,014 lb. of air freight, exceeding the previous record of 1,438,722 lb. set by the airline in October, 1959.

PULLMAN PROGRESS



Mr. FRANK D. M. HARDING, O.B.E., M.Inst.T.

• • • • • •

Introduction of the new "Midland Pullman" and the high commendation which it has evoked from many quarters, including the delegates from the Association of American Railroads which recently visited Europe, has focused attention on the Pullman Car Co., Limited, which 15 years ago was inevitably quiescent while it pondered the problem of reviving its prewar activities. This was achieved in a highly successful manner and a considerable part was played therein by Mr. Frank Dryden Morle Harding, who joined the company in November, 1945, and succeeded Mr. G. H. Griffith as general manager in the following month. After serving throughout the 1914-18 war in the Highland Light Infantry he went up to Oxford on demobilisation and then took up a business career. The coming of the 1939-45 war saw him back in the Army, this time in the R.A.O.C. with which he served in Gibraltar, North Africa, Italy and Greece. The work involved in the restoration of Pullman services was considerable. Some two-thirds of the fleet of close on 200 cars had suffered damage from enemy action and the whole fleet was in need of heavy overhaul. It was an achievement that the "Golden Arrow" was ready for re-introduction in April, 1946, and that by the end of 1947, all the facilities on both the Southern Railway and the London and North Eastern Railway had been restored. Thereafter the policy of the company was vigorous and, in certain cases, boldly experimental. One or two innovations did not endure but the "Tyne-Tees Pullman" and "South Wales Pullman" have established themselves and, as is well known, the introduction of the new diesel-electric Pullman sets on the Western Region is now imminent. Mr. Harding was elected to the Pullman board in January, 1959, becoming managing director. He is a member of the Institute of Transport and a vice-chairman of its Metropolitan section.

LETTERS TO THE EDITOR

Co-ordination of Transport

RAILWAY ROLLING-STOCK

SIR,—How glad I was to see your recent article advocating further co-ordination of public transport. For over 30 years, this has been my hobby horse, and I have written many letters to your paper on the subject, but with the notable exception of a letter I wrote to you in 1955 advocating the introduction of a car train between Boulogne and Lyon, I cannot say that the result has been spectacular.

As long ago as 1931, when I was employed on public inquiries for Green Line Coaches, I was nearly fired on the spot for daring to suggest to a prospective passenger for a destination unserved by Green Line that he should go to so-and-so by Green Line, thence by an *independent* bus! Later, I won an award from the suggestion scheme of the L.G.O.C. for the obvious suggestion that a service operated by Birch Bros., Limited, on which through fares with the Underground were available, should be included in the bus map! Later still, I was told by the L.P.T.B. that the public could not have one map showing bus, tram, and trolleybus routes, as there was not room on the paper for them all. Yet, as soon as the whole area came under one operating department of L.T.E., the job was done.

Even today, different forms of public transport continue to compete, when unity against the common enemy, personal transport, is their only hope of survival. Again taking London (no offence to L.T.E. and British Railways, simply the area which I know best) why cannot a united front be presented to the public? One public transport guide and map for the whole area to give our visitors from abroad and our own residents and provincial visitors the best way regardless of operator.

As an example, perhaps the best way from Twickenham to Colindale is by Southern Railway train to Richmond, London Midland train to Finchley Road, bus to Golders Green, and tube to Colindale, but I defy anyone to find one folder map showing it. Even within the same organisation, the Country Bus and Coach map of L.T.E. does not admit the existence of Central buses.

Foreign Examples

I find a similar lack of co-ordinated publicity in Birmingham, Glasgow, Liverpool, etc., but not in the cities of France, Belgium, Holland, Italy and Switzerland, where publicity and inquiry offices seem to be geared to deal with public transport as such regardless of the operator.

Now, more than ever, it is necessary to woo the customer away from his personal transport, but not to deny its existence. More encouragement to "park 'n ride," as the Americans call it, is needed, more explanation of the economics of so doing, more development of parking, servicing and garaging facilities at public transport terminals, or under them (or over them), more car trains, self-drive cars at the other end, even perhaps throwing in a day's self-drive car with a seven-day "anywhere" holiday ticket, more co-ordinated availability of tickets (again, perhaps, road and rail availability of holiday "anywhere" tickets), elimination of such nonsense as being asked at Baker Street when booking to Cannon Street whether you are going via the Circle Line direct or via Charing Cross, as the fares are different (what does it matter which way you go?), elimination of being treated as an outcast if you drive to Paddington or Euston and take a ticket to Wolverhampton, only to be told that your car is not a welcome occupant of the car park pending your return. You don't try twice—next time, you drive all the way.

United public transport may survive and succeed. Untied public transport may fail altogether.—Yours faithfully,

E. N. OSBORNE.

Eros House, 111 Baker Street, N.W.1.

About 150 BFs

SIR,—I have read with amusement your paragraph "S.O.S. for Registrations" in MODERN TRANSPORT of July 23. In the interests of accuracy, I would draw your attention to the fact that the registration letters BF were originally allocated in 1903 to Dorset County Council. Apparently, after about 150 numbers had been issued local objections were met and the registration FX allocated. There are a few illustrations extant showing vehicles in Dorset seaside resorts with the original registration.—Yours faithfully,

JOHN L. BROWN.

88 Bromsgrove Road, Romsley, Birmingham.

Steam Lorry Sought

SIR,—After the 1914-18 war Meux's brewery ran a fleet of Foden 3- and 5-ton steam brewers' drays. These had horizontal boilers and were chain driven. Unfortunately, the last of these grand old vehicles was disposed of some 10 years ago and I am unable to trace any existing example.

I feel it is a pity that such interesting vehicles should be lost for ever and I am keenly interested in putting one back into actual use on the road. Perhaps I could ask the courtesy of your correspondence columns to request information from those of your readers who remember these steam drays or from those who have any knowledge of the whereabouts of any of these vehicles today.—Yours faithfully,

P. PADLEY-SMITH.

9 Sheepfold Lane, Amersham, Bucks.

Riding of Multiple-Unit Stock

SIR,—Mr. Mantle's letter in your issue of July 23 in reference to the poor riding qualities of the new Kent Coast electric stock is very much to the point. It is, as he says, a pity that otherwise fine trains should have this failing; the same criticism can of course be levelled at the Hastings diesel-electric trains the bogies and frames of which are, I believe, more or less identical with those of the Kent Coast electrics. It is surely not beyond the competence of railway engineers, in this day and age, to design and build trains capable of travelling at relatively high speeds without the lurching and swaying which is such an uncomfortable feature of much of the Southern multiple unit stock. The old G.W.R. and other lines achieved this years ago.—Yours faithfully,

J. D. MILLER.

Summer Hayes, Pett, Near Hastings, Sussex.

[Continued on page 15]

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TRANSPORT IN VIENNA

Double-Deck Bus Experiments

FROM time to time British newspapers publish letters advocating Continental-type single-deck buses as the answer to all bus operating and staffing problems or sometimes, as with letters now appearing in the *Daily Telegraph*, as a cure-all for London's problems in particular. Readers of this newspaper do not need to have pointed out to them that the British double-deck bus in city service has some advantages in encouraging a free movement of passengers, a quick and cheap service (with minimum fares below those of most places except Italian cities) and a considerable degree of comfort in attracting riders for longer journeys.

A postwar Vienna four-wheeled tram hauling two trailers on Route 118 (to Lerchenfelder Guertel from Schlachthaus Guertel) at the Westbahnhof and, right, a modernised four-wheeled motor car with bogie trailer leaving Opera (note elaborate pedestrian subways) for Raxstrasse on Route 66

Moreover the same number of passengers is accommodated in less overall road space.

Double-Deck Buses in Europe

Support for this view is given by the greater interest now being displayed by operators on the Continent of Europe in double-deck bus designs, albeit these usually incorporate characteristics matching local operating conditions and thus differ considerably from British practice. Cities which have always favoured the double-decker include Berlin, Barcelona and Madrid. Although Paris, where double-deck buses and trams were once familiar on certain routes, made a fresh investigation of their potentialities after the war nothing tangible came of it apart from some peculiar vehicles operated in conjunction with the Bateaux Mouches on the Seine, which owe more to the Spanish rural double-decker than to anything seen in these islands. Now, however, in Italy Turin has ordered 12 double-deckers for experimental purposes and Rome is reputedly about to give them a trial. In Austria a double-deck bus experiment is now in progress in Vienna.

Vienna Experiment

The vehicle concerned is a massive low height unit built by Gräf and Stift of Liesing, one of the Vienna suburbs. It seats 66 passengers, 30 of whom are on the lower deck. It is arranged so that the passengers enter a large rear boarding platform, protected by power-operated doors. After passing the conductor's desk they can either sit in the lower deck or ascend the rearward facing staircase over the conductor's head to reach the upper deck. Here seats are arranged partly on an elevated island above the gangway and partly as in a British lowbridge double-decker. There is a forward winding staircase to an exit on the right of the driver, also protected by doors. Standing passengers are not allowed on the upper deck but provision is made for 39 downstairs.

In a handsome red and cream livery, the bus, depicted on this page, is operating between the Westbahnhof and Praterstern on Service 4, running on a special schedule among the normal single-deck units. In these circumstances it is difficult to ascertain whether passengers fight shy of using the upper deck because of the dog-legged approach to it or reluctance to ride in an elevated position or whether the upper deck is being used unduly as a sort of circus attraction. Certainly on one journey made by the representative of MODERN TRANSPORT there were at least six teenage boys eagerly awaiting the arrival of the double-decker at Westbahnhof and they made a determined effort to secure the front top deck seats. This busy route crosses the central ring between the Opera, Stephansplatz and Schwedenplatz.

The experimental 108-passenger double-deck bus built by Gräf and Stift for Vienna City Transport at work on Service 4 from Westbahnhof to Praterstern

Tramway Substitution

A certain amount of tramway substitution has already taken place in Vienna on radial tram routes across the district between the inner ring and the outer suburbs. The most recent example is 61, Opera to Meidling, where it was found convenient to divert the outer end of the route to serve a newly built up area. It is now a possibility that the circumferential Route 13, from the Alseh Strasse via the Neubau Gasse to the Sudbahnhof, well known to tourists because it passes the Belvedere Palace, will be converted to double-deck bus

(*Continued on page* 12)

Interior view of the double-decker at the stairs for passengers to ascend to the upper deck; the front end view at St. Stephen's Cathedral shows the exit for upper-deck passengers. There are 36 seats up and 30 down; on the lower deck 39 standing passengers are allowed

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PASSENGER TRANSPORT DEPARTMENT

TENDERS FOR MOTOR BUSES

TENDERS are invited for the supply of 12 two-axle single-deck Motor Bus Chassis complete with 42-seater, front-entrance, centre-exit omnibus bodies with standing accommodation for 16 passengers, or alternatively chassis only or bodies only.

The general requirements of the Corporation may be obtained from the General Manager and Engineer, City of Portsmouth Passenger Transport Department, Eastney, Portsmouth.

Tenders must be delivered to me at my office not later than September 3, 1960. No Tender will be considered unless enclosed in a plain envelope, sealed and endorsed "Tender for Motor Buses."

The Corporation do not bind themselves to accept the lowest or any tender.

J. R. HASLEGRAVE,
Town Clerk.

The Guildhall,
Portsmouth.

MANCHESTER CORPORATION

TRANSPORT DEPARTMENT

APPOINTMENT: CHIEF TECHNICAL OFFICER

QUALIFIED Engineer required to supervise section dealing with general technical investigation and experimental duties associated with public service vehicles operation and maintenance. Salary in accordance with J.N.C. scale "B" (£1,260/£1,485 per annum).

Forms and details from Town Clerk, Town Hall, Manchester, 2, returnable by September 12, 1960.

CLASSIFIED ADVERTISEMENTS

RATES.—The minimum charge for classified advertisements is 7s. for 14 words or less, and 6d. for each additional word. The name and address of the advertiser is charged at the same rate. If a box number is used 2s. extra is charged to cover our name and address and postage. If set in paragraph form each paragraph is estimated separately. Official Notices and semi-display in the classified columns are charged at the rate of 48s. per single column inch.

SITUATIONS VACANT

ASSISTANT to Chief Civil Engineer required by British Railway Company in Chile. Early prospects of promotion to Deputy Chief Engineer. Applicants must have railway experience; aged about 35-45 years; qualifications to A.M.I.C.E. standard. Sterling salary, allowances, retirement benefits, free quarters, passages, three-year tours, home leave, etc. Write to Box 3580, c/o Charles Barker and Sons, Limited, Gateway House, London, E.C.4.

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Excellent opportunity large copper company, Chile, South America. Two-year contract with transportation both ways for you and family. Base salary $525.00 to $650.00 per month depending upon age and experience of applicant. Box No. 3840, MODERN TRANSPORT, 3-16 Woburn Place, W.C.1.

CARS OFF THE ROAD

Action by Luton Delivery Firm

THE factory to customer movement of new cars has always posed a prestige question. Should the cars be driven—in their natural element—and arrive with perhaps several hundred miles on the clock, or should they be carried, still positively new, helpless on the backs of road and rail vehicles? To the manufacturer the question involves both reputation and economics; to the owner-driver, who is eager to run in the car to the absolute letter of the instructions, and who may well be shocked to find that half the running-in mileage has already been covered, the question has been known sharply to colour his views about the make of car.

Cars awaiting shipment at Chiltern Green with a loaded train in the background

With the present boom in the motor industry, the problem is more to the fore than ever, for car delivery firms are being hard pressed to keep pace with the volume of new vehicles emerging from the factories. Mindful of customer satisfaction, most firms carry their cars over the longer distances and in present circumstances many have preferred to increase their road transporter fleet. It is thus interesting to note that at least one big firm, Anglo-Scottish Car Deliveries, Limited, which is responsible for the majority of Vauxhall and Bedford deliveries in Scotland, has boldly plumped for rail and have taken all its cars off the road.

150 Cars a Week

With the help of British Railways, the firm is now operating a regular rail delivery service of some 150 cars a week from the Vauxhall Luton factory to Bonnybridge (near Falkirk). Formerly every new vehicle was driven from Luton direct to Vauxhall depots in Scotland, involving a road journey of nearly 400 miles and some customers' disappointment to match. Now the mileage clock shows only a nominal figure. The Anglo-Scottish system is now to move its cars two miles only by road—from the Luton factory to Chiltern Green, a latterly disused railway station which has been adapted as an assembly and loading point for all Scottish-bound cars. From here, the cars are driven on to the newest type of car-carrying rail wagons.

At Bonnybridge goods depot, 12 hr. rail journey from Luton, the cars are off-loaded to await road delivery to the main dealers in Scotland, these short road deliveries, also the road ferrying at Luton, being carried out by Anglo-Scottish drivers. The decision to switch from road to rail was unquestionably influenced by the shortage of drivers specialised in distance driving with new cars, and Anglo-Scottish felt that the road transporter was not an economical proposition for its type of long haul.

"To keep three transporters on the road all the time," commented a director of the firm, "you would need four because of servicing. In most cases, the transporters would also be doing the return journey empty. We finally decided that rail movement seemed to be the obvious answer. The cars now reach the customer with a small mileage on the clock and there is now no risk of overdriving."

At present British Railways is running three trains every week for the firm. It takes only about three hours to load a train with 50 vehicles

The first train left for Bonnybridge on April 5 and this view shows it partially loaded at Chiltern Green

—which compares with the 1½ hr. needed to load five vehicles on a road transporter—and special ramps have been built at Chiltern Green and at Bonnybridge sidings to make loading operations easier. The new Carflat wagons are equipped with hinged platforms which can be lowered into position between the wagons so that the cars can be driven on or off the train safely and speedily. It may be added that an advantage of the rail service from a trade point of view is that there is now a permanent float of cars available at the Bonnybridge depot.

TRANSPORT IN VIENNA

(*Continued from page* 11)

operation. For this purpose a fleet of 30 would be required and a good test of the vehicles and of public reaction would be obtained on a route which loads well, has many sharp corners and uses a number of one-way streets. With the inner ring closed to trams Vienna is a city which in future will probably favour bus operation—but single-deckers cannot be financially successful. The double-deckers may have a chance.

In the meantime modernisation of trams has not been neglected and there are, as illustrated, many good postwar four-wheelers as well as modern eight-wheeled cars which bear favourable comparison with anything in Europe. Some remodelled four-wheelers haul eight-wheeled trailers as seen in a photograph reproduced on page 11 of the terminal loop opposite the Opera House.

A power-rotated jib crane with a load capacity up to 20 tons has been introduced by R. G. LeTourneau, Inc., Longview, Texas, U.S.A. Development of this high-capacity unit, which has low mounting space requirements, was reportedly made possible by a new high-strength alloy steel being produced by the company's steel division.

At a meeting of vehicle safety belt manufacturers convened by the British Safety Council it was agreed to form an association of safety belt manufacturers to maintain a high standard of belts for sale to the public and to conduct further research into crash injuries. A constitution is to be drafted that will incorporate a code of ethics to which all manufacturers will adhere.

FORTHCOMING EVENTS

Until September 7.—Central Line Diamond Jubilee Exhibition. Charing Cross Underground Station.

August 14.—E.R.S. Members visit to Southampton—Hythe ferry and Hythe Pier Railway.

August 17.—O.S. (Scottish). Meeting in Edinburgh.

August 20.—S.R.L.D.S. Visit to Ipswich diesel depot.
O.S. Visit to new London Transport Upminster District Line depot.
O.S. (Northern). Visit to South Shields Corporation Transport and tour of trolleybus system.

August 23.—O.S. (Scottish). Meeting in Glasgow.

August 27.—B.L.S. Visit to Kington and Presteign branches by freight train, leaving Leominster 8.20 a.m.

August 28.—O.S. (North Western and Yorkshire). Visit to Halifax Passenger Transport Department.
S.C.T.S. Coach tour and visit; London Airport and Oxford.

September 2.—Rly.C. H. A. Vallance, "North of Inverness," Royal Scottish Corporation, Fetter Lane, E.C.4. 7 p.m.

September 5-11.—Society of British Aircraft Constructors. Annual flying display and exhibition. (Public days September 9-11).

September 11.—H.C.V.C. Fifth Annual Old Lorry Rally. Cranes Close, Basildon. 2.30 p.m.

September 12-16.—Municipal Passenger Transport Association. Conference at Douglas, I.o.M.

September 18.—S.C.T.S. Bus tour of Southampton and visit to graving dock and locomotive shed.

September 23-October 1.—Commercial Motor Show, Earls Court.

September 24.—O.S. Annual dinner, Clarendon Restaurant, Hammersmith, W.6. 7 for 7.30 p.m.

From August 6, the London office of Gloucester Railway Carriage and Wagon Co., Limited, Wm. Gardner and Sons (Gloucester), Limited, Gloucester Foundry, Limited, Hatherley Works, Limited, Joseph Kaye and Sons, Limited, and Winget, Limited, was transferred to 1-5 New Bond Street, London, W.1.

AIR SUSPENSION FOR 4,400 GALLON TANKER

This 4,400 gallon (20,000 litre) TB tanker has Thompson designed running gear with pneumatic suspension to maintain the tank at constant height running full or empty. Besides giving speedier all-round delivery time and easier driving due to improved stability, the pneumatic suspension relieves the tank of stresses, giving increased life and lower maintenance.

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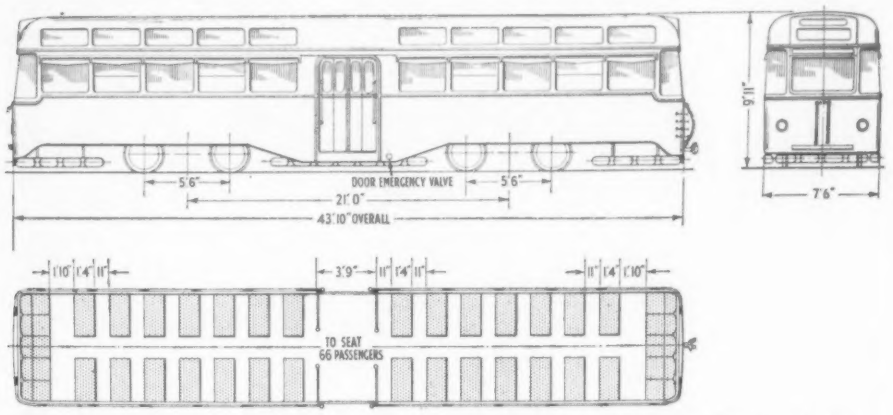
NEW TRAM TRAILER FOR BLACKPOOL

First of Ten Enters Service

AS already recorded in MODERN TRANSPORT, the first of 10 new trailer cars for Blackpool Corporation Transport was handed over formally on July 19 and is now in service. Seating 66 passengers, it has Metropolitan-Cammell-Weymann bodywork and Maley and Taunton trucks and follows successful experience with the prototype set introduced in the spring of 1958.

The tramway between Starr Gate, Blackpool, and Fleetwood Ferry is practically flat, the major portion of the 11.15 miles is coastal and, of this distance, 10 miles is reserved track. At Starr Gate and Fleetwood Ferry, the track is laid as a loop and cars are not reversed at the termini. In addition, loops were built some years ago at the Pleasure Beach and Bispham, both of which are busy focal points in the season, again allowing cars to be turned back without reversing. In view of this existing track layout trailer car operation appeared most attractive, as uncoupling of trailers would not be necessary at any time during service.



The new trailer car for Blackpool has a 66-seat M.C.W. body and Maley and Taunton trucks

Prolonged Experiments

During the winter of 1955-56 Blackpool Corporation began trials using two coupled prewar cars with interconnected brake gear. It was apparent at an early age that it had sufficient motive power, and the fact that braking the 16 wheels of the coupled cars was even more effective than braking a single car unit was felt to be particularly satisfactory. Following a break during the summer, the experiments were continued during the winter of 1956-57, and at this stage careful checks were made on motor temperatures (bearing in mind summer operation), accelerating electrical loads, braking pressures and temperatures. The important question of incorporating a duplicated emergency air brake system, as distinct from the normal service air brake layout also needed careful consideration. The emergency air brake system is a prime requirement of the Ministry of Transport in case of service air brake failure, or in the unlikely event of the trailer breaking away from the tramcar in service. Under the latter condition all brakes must be automatically applied on both the tramcar and trailer.

After overcoming several problems connected then fully considered, and it was decided to modify two 1935 English Electric cars as being the most suitable for power-to-weight ratio. This type has two 57-h.p. 550-volt motors, the unladen weight being about 13 tons.

Task for Undertaking's Workshops

All the work was carried out in the tramcar workshops and numerous detail ideas incorporated, which were not necessarily immediately apparent, were the direct results of the great enthusiasm shown during design and construction. It was decided at the outset to alter the original vee-fronted cars to modern full front for appearance and better visibility, and to ensure that the driver would have a comfortable seat. The prototype twin-car set was officially inspected and tested by the Ministry of Transport on February 18, 1958, accompanied on the tests by the divisional road engineer and the police authorities. After inspection, exhaustive testing and discussions lasting all the day, unofficial approval was indicated. Formal application to the Ministry followed, official approval was received on March 21, 1958, to operate single-deck trailer trams between Starr Gate, Blackpool, and Fleetwood Ferry, and on Wednesday, April 9, 1958, the inaugural run of the twin-car service in Blackpool was made. [The set was fully described in our issue of April 19, 1958.]

The prototype trailer proved so successful that the transport committee decided to purchase 10 new cars seating 66 passengers, which together with the motor car with 48 seats means a total of 114 passengers. Four more twin-car sets will, it is hoped, be in service later this year, with possibly all 10 sets by the 1961 season.

The first of the new M.C.W. trailer cars for Blackpool Corporation is seen with the lower part of the Tower appropriately in the background

The George Washington Bridge

(Continued from page 3)

platform between Broadway and Wadsworth Avenue will provide parking space for 90 buses and overpasses spanning Broadway will connect this parking area and the passenger station.

There will be passenger entrances on Broadway and Fort Washington Avenues, as well as a covered passageway leading from the 175th Street Independent Subway station. Subway passengers will utilise a bank of three escalators to reach the main passenger concourse. Escalators leading to each of the 10 bus loading platforms will connect the main concourse with the bus-operating level. This will provide 36 suburban bus loading positions at 10 island platforms and an unloading platform extending the full length of the south side of the building. Seven saw-tooth berths will be provided on the street level for long-distance coaches.

Work Started

Authorisation for the lower deck project was given by the New York State Legislature in March, 1955, and similar approval was given by New Jersey in November, 1956. Other authorities were also involved such as the New York City Board of Estimate and in due course they approved the parts of the scheme affecting them. It is, incidentally, indicative of present conditions that a project which was, in 1957, estimated to cost $167 million has now risen to an estimated $183 million, although some of this increase is attributable to elaboration of the earlier proposals. Another point of interest is that, thanks to the foresight of the original design, the actual work on the bridge itself will cost no more than $25 million, the whole of the rest being needed for the approaches, the bus station, rehousing occupants of demolished houses and so forth.

The Port of New York Authority Commissioners authorised the project in July, 1957, and work commenced at the end of that year. The authority is responsible for the scheme from the western part of Fort Lee, New Jersey, to Amsterdam Avenue, Manhattan, and this is shown on the plan on page 3. Erection of the structural steel sections began in January and should be completed early in 1961. In fact progress has been such that this may happen decidedly earlier than that. As indicated earlier construction is from below so as not to interfere with traffic on the existing span. This has been devised by the Port Authority and Bethlehem Steel Company engineers, it is thought for the first time.

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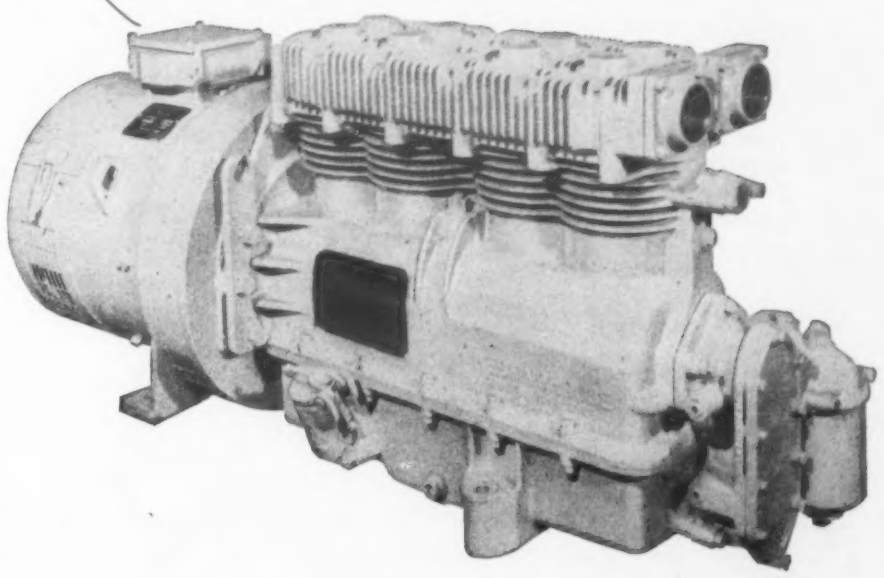

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Air transport features of the flying display and exhibition which this year will be larger than ever, with new aircraft, ground service vehicles and much new radar and electronic equipment.

SEPTEMBER 10 issue

COMMERCIAL VEHICLE EXHIBITION
EARLS COURT

Full description and details of the exhibits at the important passenger and freight commercial vehicle exhibition held in London every two years.

SEPTEMBER 17—PREVIEW NUMBER
SEPTEMBER 24—REPORT NUMBER

B.T.C. ELECTRIC RAILWAY CONVENTION & EXHIBITION

Electric traction engineers in Britain have had to solve some unusual problems; those concerned with 50-cycle high tension electric traction will be fully ventilated in some 41 papers at the international convention; there will also be visits to track sites and the British electrical industry and an exhibition at Battersea.

OCTOBER 1 issue

MODERN AIRWAYS and COMMERCIAL AVIATION SECTION

HELICOPTER ICE PROTECTION

Pioneer Work by Napier

BEING aware of the eventual need for all-weather flying by helicopters, the de-icing department of D. Napier and Son, Limited, at Luton, has for more than three years been investigating the problems of helicopter blade de-icing. Now the Napier ice protection system for helicopters has been developed with two main attributes in mind. Primarily it was realised that heater mats for helicopter blades should be constructed in such a fashion that the completed blade assembly would be fully interchangeable with any other blade manufactured for the same type of helicopter. This meant that the Spraymat heaters had to be designed and made to a very rigorous production standard, even for the initial prototypes, from the point of view of aerodynamic balance and weight.

Secondly, the system had to be so designed that, if the helicopter was to be operated for long periods in hot climates, the heavier parts of the system, particularly the electrical control gear, should be readily removable. Consequently, after a great deal of private venture research into the feasibility of such a system, Napier approached Westland Aircraft and the Admiralty and it was agreed that prototype sets of the Spraymat system should be engineered and tested on the Westland Wessex, these being in all respects fully representative of a production version.

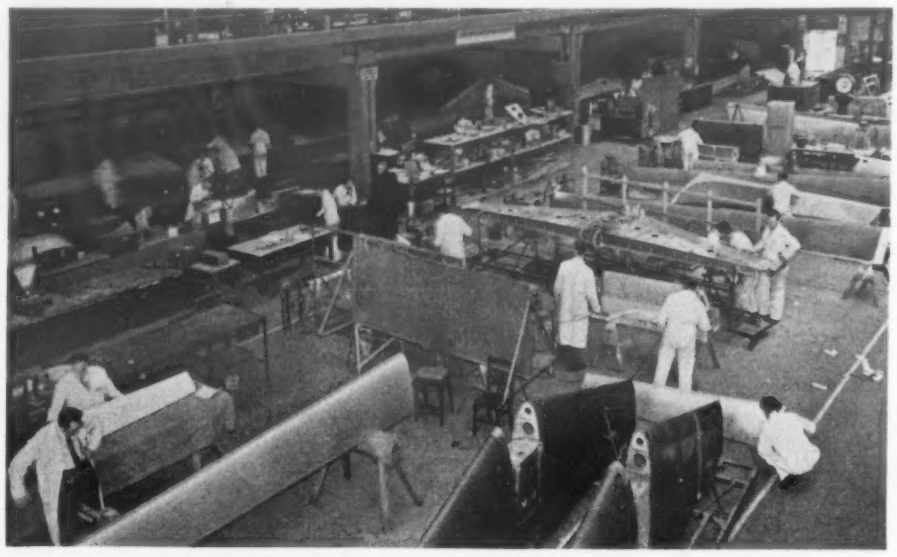
This is thought to be the first time that a company has approached this very difficult problem on a production basis for this type of aircraft. In the past several helicopters have been equipped with electrical ice protection, but this has always been on the basis of heater mats carefully manufactured to suit a particular set of helicopter blades. All the work that is at present being carried out by Napier is therefore directed towards the all-weather version of the Wessex with an interchangeable blade system. It should, however, be stressed that the basic principles of this type of ice protection can be applied to any type of rotating wing aircraft or hovercraft. The current programme is for the manufacture of three aircraft sets of equipment, each of which comprise heater mats for main and tail rotor blades and their associated control and distribution equipment. These items are of course being backed up by further heater mat specimens which are being used for fatigue, erosion, thermal fatigue and heat transfer tests. This programme will be carried out basically by Westland Aircraft, Limited.

Heater Mat Construction

At an early stage it was realised that, if Spraymat was to be applied directly to the blade structure, the blades would need to be frequently transported between the aircraft manufacturer's works and Luton, and this in its turn would inevitably lead to handling and packaging problems. It was therefore decided that the heater mats would be of the prefabricated type and should subsequently be bonded on to the blades at the aircraft manufacturers' works.

The heater mats consist of two resin-glass cloth laminates which form the base and top coats of the heater mat, the sprayed-metal heating elements being sandwiched between. The complete glass cloth laminate is symmetrical about the axis of the rotor blade, whilst the heater elements have a chord-wise coverage of approximately 10 per cent on the upper surface and 25 per cent on the lower surface of the blade. The laminate is equally disposed about the blade centre line in order to facilitate adhesion but the sprayed elements are asymmetrical due to the fact that in normal flight the blade has a positive angle of incidence, and therefore the ice catchment area is greater on the lower surface than on the upper.

Each main rotor blade heater mat has six spanwise cyclic areas, each area being the width of one sprayed element. These elements in parallel are contacted together at the rotor blade tip within the heater mat; and the return path is by means of inset copper foil busbar on the top surface of the heater mat. By these means each heating element can be switched on any sequence and consequently a great saving in power can be obtained. The tail rotor blades are of similar construction except that the heating elements make up one heating area per blade.



The Spraymat shop at Luton with components for Britannias, Vanguards, Argosy, Canadair 540 and other aircraft in course of production

Protection against damage of the heater mat is accomplished by applying a coating of Napier Stoneguard to the inboard section of the heater mat whilst the outboard section is coated with an electroform micrograin nickel sheath. The metal coating protects against high speed rain erosion and mechanical damage whilst the Stoneguard coating, being more flexible than the metal foil, will protect the low speed inboard end of the rotor blade, where the greatest flexure of the blade occurs.

Packing a finished helicopter blade heater mat into a special container

Power Requirements

In the case of the Wessex, heating elements on opposite rotor blades are cycled together, giving 12 cyclic areas for the four main blades. These 12 areas are supplied from two phases of the three phase alternator whilst the remaining phase supplies the tail rotor heater mats. The total power requirement of the system is approximately 18kVa. The distribution system primarily consists of the rotor head distributor and the cyclic interrupter which is mounted in the fuselage. The rotor head distributor is controlled by the cyclic interrupter so that all switching of current is carried out within the fuselage while the distribution acts purely as the current distributor.

These items have been basically designed and specified by Napier but detail development and manufacture has been sub-contracted to Austinlite, Limited. This method of switching is unique as far as aircraft are concerned and this principle has given rise to a new line of thought in electrical distribution, which is now being considered for fixed-wing aircraft.

The Vickers Vanguard is now test flying again and of the two at work this is the first of the Trans-Canada Air Lines order

SOCIAL AND PERSONAL

British Association

THE annual meeting of the British Association for the Advancement of Science will be held under the presidency of Sir George Thomson, F.R.S., at Cardiff, from August 31 to September 7. Possibly the only paper of direct transport interest in a year when the main theme appears to be what science has done to man is to deal with heated roads and will be by Mr. W. I. J. Price, principal scientific officer, Road Research Laboratory.

* * *

We record with regret the sudden death of Mr. W. A. Worth, who was appointed purchasing officer, London Transport, as recently as July 1.

* * *

We regret to record that Mr. H. E. B. Cavanagh, A.R.I.B.A., A.A.Dip., architect, chief civil engineer's office, Western Region, B.R., lost his life as a result of a sailing accident off the Isle of Wight on August 3. Born in India in 1909, he was educated at Clifton and after studying his profession at the Architectural Association in London, gained experience in various London offices and in private practice. He volunteered in the ranks of the City of London Yeomanry in October, 1939, and was commissioned to the King's Regiment. He saw subsequent service with the Parachute Regiment, 6th Battalion (Royal Welch), and was promoted major in 1943. On release from the forces in 1945, he joined the Great Western Railway as temporary assistant to the architect, was appointed assistant architect in 1947, and architect in 1949.

The late Mr. H. E. B. Cavanagh

Mr. F. L. Hick

* * *

Mr. M. Scott has been appointed commercial vehicle sales manager of the Marston Motor Co., Limited, London, N.15.

* * *

Mr. A. W. Crombie, A.M.I.Loco.E., hitherto mechanical engineer, Bulawayo, has been appointed senior mechanical engineer, Rhodesia Railways.

* * *

Mr. W. I. Barraclough has been appointed Mintex p.s.v. representative in Lancashire and Yorkshire. Mr. J. C. Fenton, whom he succeeds, joined British Belting and Asbestos, Limited (manufacturer of Mintex), in 1915, and is retiring in September.

* * *

We regret to record the death of Mr. P. G. Warren, founder and managing director of Warren's Coaches (Kent and Sussex), Limited, Ticehurst, Sussex. He was 72. The fleet, which comprises some 15 coaches, is garaged at Ticehurst and Edenbridge but several vehicles spend much of the summer working on Continental tours.

* * *

We regret to record the death of Mr. E. W. Broadbent, F.C.A. A chartered accountant and industrialist, he was one of the original directors of Charles H. Roe, Limited, relinquishing his seat when the company became associated with Park Royal Vehicles, Limited.

* * *

The South Eastern and Scottish Transport Users Consultative Committees have been reconstituted on the expiry of their present terms of office. The only new members as yet announced are South Eastern area; Mr. T. A. Gazzard (agriculture), Councillor F. Lines (Portsmouth) and Mr. F. P. B. Taylor (commercial officer, Southern Region, B.R.): Scotland; Mr. W. B. Swan (agriculture), Mr. J. C. Williamson and Mr. A. Prentice (industry), Councillors (Mrs.) C. B. M. Filsell and J. Bennett, Mr. A. C. Smyth and Provosts R. Wotherspoon and J. Sinclair (local authorities). Councillor Bennett is convener of the Glasgow Corporation Transport Committee and Mrs. Filsell chairman of the Edinburgh Transport Committee.

The election of Mr. G. Patterson as president and a director of the American Yale and Towne Manufacturing Company is announced.

* * *

We regret to record the death of Mr. Harris Watson, who was general manager, Sheffield Transport Department, from 1936 to 1945. He was 79.

* * *

We record with regret the death of Mr. L. A. White, U.K. district freight manager, for United States Lines. He was 60.

* * *

The British Aircraft Corporation Limited, announces that Mr. Charles Gardner, O.B.E., has been appointed publicity manager. He was previously sales publicity manager, Vickers-Armstrongs (Aircraft), Limited.

* * *

Mr. Frank L. Hick, M.Inst.T., has been appointed to the position of operating officer, North Eastern Region, B.R. Mr. Hick joined the North Eastern Railway in 1922. He held positions in the rates and statistics offices and at the operating superintendent's headquarters at York. In 1945 he was appointed head of the freight trains section (Eastern operating and motive power) in the Eastern Region at Liverpool Street and later became head of the passenger trains section there. Returning to York in 1947 he became head of the passenger trains section (operating and commercial) and in 1951 was appointed head of traffic section in the office of the chief regional officer. In 1952 he was appointed assistant to the chief regional officer (general), which post was later designated assistant to general manager (general). In May, 1957, Mr. Hick was appointed assistant operating officer, North Eastern Region, which post he now vacates. Mr. Hick took a leading part in the development of diesel multiple-unit services and was chairman of the North Eastern Region diesel development committee. His drive and foresight was therefore largely responsible for the modern diesel multiple-unit services being developed quickly in the North East. He won an Institute of Transport award for a paper thereon.

* * *

The annual general meeting of the Transportation Club, Limited, will be held at the Elizabeth Room, Coastal Chambers, S.W.1, on September 2, and will be followed by a luncheon. Members are being asked to determine the future of the club, the hon. secretary of which is Mr. E. J. Morris, 10 Mayfair Place, London, W.1.

* * *

We regret to record the death of Mr. W. McKie, who retired last year as stores superintendent, Eastern and North Eastern Regions, B.R. He was educated at Kilmarnock Academy and entered the service of the former Glasgow and South Western Railway in 1913. During the war of 1914-1918 he served with the Royal Field Artillery. He became general assistant to the stores superintendent, Northern Division, L.M.S.R., and in that capacity was largely responsible for the extensive reorganisation of the stores department in Scotland. He was subsequently appointed divisional storekeeper for the division at Glasgow and in 1949 became assistant stores officer, Scottish Region. In 1950 Mr. McKie was loaned to the Eastern and North Eastern Regions to assist in the reorganisation of main workshop stores. In 1951 he became assistant stores superintendent for the two regions and in 1955 was confirmed as stores superintendent.

The late Mr. W. McKie

NEW FIRE EXTINGUISHER

Handy Nu-Swift Carbon Dioxide Unit

SEVERAL years' experiment have resulted in the introduction, by Nu-Swift, Limited of a 5-lb. capacity leakproof carbon dioxide fire extinguisher. Mainly intended for fighting inflammable liquid fires and fires involving electrical equipment indoors, the new extinguisher has a mean range in still air of 11 ft., the carbon dioxide being expelled for 8 sec. at 65 deg. F. through a novel type of discharge diffuser. Designed for fire fighting at close quarters, the new unit, in the hands of an inexperienced fire fighter, is said to be capable of putting out a 6 sq. ft. inflammable liquid fire. In the case of an experienced fire fighter, the corresponding figure is 9 sq. ft.

Carbon dioxide, although much less efficient for fire fighting than dry powder, is non-damaging in use and leaves no residue, while the carbon dioxide can be made to penetrate into places which are inaccessible to other fire-fighting media. Hence it is invaluable for fighting fires in small garages, workshops and laboratories, or fires involving fine chemicals or complicated electrical or electronic equipment ashore or on board ships. A low weight of 19½ lb. makes for easy handling and it can be reloaded in about a minute.

Designated Model 1505, the new unit has been approved by the Ministry of Transport for use on merchant vessels and also in Switzerland and Austria by the relevant authorities.

LETTERS TO THE EDITOR

(Continued from page 9)

Midland Pullman

SIR,—I was interested in your account of the new Midland Pullman trains. I feel it is a pity that the ordinary traveller has no opportunity of seeing this bit of modernisation from inside. Could not these trains do some short but cheap excursions on Sundays to give everyone a chance to see for himself, or alternatively, could they run, and be advertised to run, on some comparatively local journeys on Sundays, for instance, London to Bedford.—Yours faithfully,

MIDLANDER.

[Staff difficulties might hinder such a provision; in the ordinary course the train originates at Manchester on Monday morning and terminates there on Friday evening. The midday London—Leicester trip does appear to afford London business people interested in travel an unusual luncheon venue, if that meal can be prolonged from 12.45 p.m. to 4 p.m.—Editor, MODERN TRANSPORT.]

The Editor is always glad to receive letters from readers on subjects germane to the transport industry, but these should be written as concisely as possible. The opinions expressed therein must not, however, be regarded as having editorial endorsement. Where correspondents desire to use a nom-de-plume it is essential that the Editor should be informed of the name and full address of the writer as indication of good faith.

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IMPORTANT CONTRACTS

Boeing 720s for Eastern

MEDIUM-RANGE Boeing 720 jet air liners on order now total 82, with the placing of a contract for 10 of these machines by Eastern Airlines. Scheduled for delivery in 1961, the cost will be about $44 million. The 720Bs ordered by Eastern will be equipped with four Pratt and Whitney JT3C-12 jet engines producing 13,000 lb. thrust each at take-off. The aircraft are designed to operate over ranges from 500 to 4,100 miles at 600 m.p.h. carrying from 88 to 149 passengers and providing 1,390 cu. ft. of additional cargo space.

Highest Fordson Tractor Exports

Shipment of 5,729 tractors overseas by Fordson Tractor Division of Ford Motor Co., Limited, in the month of July was an all time record. It brought total tractor exports in the first seven months of this year to 33,650, an increase of 21.4 per cent over the similar period in 1959, which was itself a record.

Southern Region Contracts

The Southern Region of British Railways announces the following contracts:

John Mowlem and Co., Limited, London, E.14, for a new car ferry slipway at Fishbourne, Isle of Wight.
B.K.S. Air Survey, Limited, Leatherhead, for aerial survey of New Cross—Lewisham area.
Hunting Surveys, Limited, Boreham Wood, for aerial survey of Salisbury—West Moors—Redbridge area.
Fairey Air Surveys, Limited, Maidenhead, for aerial survey of Salisbury—Brookwood—Amesbury area.
John Laing and Son, Limited, London, N.W.7, for reconstruction of Folkestone Central Station.

Australian Railway Reconstruction

The lowest tender (£1,833,000) for reconstruction of the first 242-mile section of a £23 million rehabilitation programme for 700 miles of railway from Mount Isa to Townsville, in Australia, has been entered by an international group that includes the British company, Davis Construction. The group is headed by the Queensland firm, Hornibrooks, Limited, and includes also United States and New Zealand companies. The contract will not necessarily go to the lowest bidder.

Dungeness Lighthouse Electrical Contract

Pelapone, Limited, Derby, a member of the Steel Group of Companies, has been awarded the contract for the supply and installation of all functional electrical equipment for the new lighthouse at Dungeness, Kent. The lighthouse, which was officially opened in June by the Duke of Gloucester, is the first major Trinity House lighthouse to be erected for over 50 years. It was made necessary by the construction nearby of a nuclear power station which will obscure the light from the existing Dungeness high lighthouse.

Diesel Railcar Sets for Guinea

The railway department of the M.A.N. Nuremberg works has announced an order from the National Railways of the Republic of Guinea, for six three-car diesel-hydraulic railcar sets for operation on metre gauge. The sets will comprise two power cars containing also the luggage compartments and second-class passenger compartments while the central trailer coach will embody the first-class compartment, a dining-room, kitchen and bar. In addition a saloon car which will be suitable for service with any of the sets is to be built for the Guinea Prime Minister, Mr. Sekou Touré.

N.C.B. Vehicle Replacements

The North Western Division of the National Coal Beard has ordered a further 21 vehicles from A.E.C., Limited, for fleet renewals. They include six-wheelers with steel bodies for slag disposal and four- and eight-wheelers with light-alloy bodies for fuel distribution locally. All will be equipped with Pilot Works bodies and tipping gear, on which this operator has now standardised. A.E.C. Mammoth Major 6 chassis with Pilot Works gear have also been specified for 11 new tippers ordered by George Wimpey and Co., Limited, which concern already operates over 100 A.E.C.s.

Eastern Region Contracts

The Eastern Region of British Railways announces the following contracts:

Thomas Fletcher and Co., Limited, Mansfield, for repairs to bridge between Killamarsh West and Woodhouse Mill.
Strachan and Henshaw, Limited, Bristol, 2, for a wagon turntipper, haulage winch and discharge chute at Keadby Jetty.
W. and C. French, Limited, Wisbech, for reconstruction of bridge over the Great Northern main line between Tuxford Central and Fledborough.
George Wimpey and Co., Limited, London, W.6, for various works at new carriage servicing depot, East Ham.
James Scott and Co. (Electrical Engineers), Limited, London, S.W.1, for electrical installations at Tilbury Riverside and East Tilbury stations.
Shephard, Hill and Co., Limited, London, W.5, for platform extensions at London Fields and Cambridge Heath stations.
Lomount Construction, Limited, London, W.1, for sheet-steel piling along North Soak Drain, between Crowle and Althorpe.

AIR-COOLED REFINERY

Esso Plant at Milford Haven

AN article in the summer 1960 edition of *Esso Magazine* discusses the merits of the unconventional air-cooling system employed at the new Esso Refinery at Milford Haven, the first refinery in the United Kingdom to be entirely air cooled. Provision of heat for processing in an oil refinery accounts for a large part of the cost of operation and every care is taken to conserve it. A hot product is made to give up much of its heat to the feedstock through the medium of a heat exchanger. Further cooling of the product is often essential and the conventional medium is water—large volumes of it. At the Esso Refinery, Fawley, 150 million gallons of cooling water is used each day.

Simplicity of Method

Water cooling, however, requires a complex system of pumps, pipelines and valves. The article points out that due to the possibility of contamination with oil, the water has to be passed through oil-water separators and recovery systems so as to be certain that there is no contamination when it flows back into river or sea. Corrosion problems abound; there are heavy capital expenditure and high operating costs and careful technical surveyance is entailed. "Compared with this complexity," says the author, "air cooling—simply blowing air across the outside of a bank of tubes carrying the hot liquid—has obvious advantages." Overcoming design problems and the use of finned tubes and high efficiency fans has brought about a radical change in refinery operation, resulting in greater simplicity and greater economy in both capital expenditure and operating costs.

SHIPPING and SHIPBUILDING

St. Lawrence Seaway Traffic

ALREADY in the first three months of the 1960 season there has been a marked increase, as forecast, in the cargo tonnage on the St. Lawrence Seaway compared with last year. The increase is especially marked in bulk cargoes. In the Montreal—Lake Ontario section bulk cargoes were up from 1,768,101 tons to 2,703,483 tons in the up direction and 3,298,914 (3,024,827) tons in the down direction. There was actually a decline in the number of transits. The figures for the Welland Canal section are just as noteworthy. Bulk cargoes in the up direction totalled 2,787,053 (1,899,947) tons and in the down direction 7,037,111 (5,601,696) tons.

Italian Nuclear Tanker

AN Italian project for a nuclear tanker has been submitted to the Euratom High Commission, it is announced in Brussels. The 52,000-ton tanker would be equipped with a reactor "of advanced design" to be developed in Italy and the study, research and development programme for the ship was submitted by the Comitato Nazionale par le Ricerche Nucleari, the Fiat company and the Ansaldo shipyards. Euratom would provide technical and financial aid for the programme.

Wide Resort to Plastics

IN the new *Windsor Castle*, 38,000-ton Union-Castle liner making her maiden voyage next week, over half a million sq. ft. of laminated plastics material have been installed to provide decorative, easily-cleaned and fire-resisting surfaces for bulkheads, deckheads and fitment tops, replacing the polished mahogany and paintwork of yesterday. In the first-class shop area (seen in the accompanying illustration), a most convincing

First-class shop area of the new Union-Castle liner "Windsor Castle," in which a marble effect has been achieved by the use of a special design of Warerite laminated plastics

marble effect has been created by the use of a specially developed design of veined white Warerite which has been used as panelling round the display windows. The entrances to each first-class cabin are surfaced with Warerite in a grey and pink floral design, as are the bathrooms which adjoin them. This same delicate pattern has also been used to panel the bulkheads in the female staff mess and lounge. A gay red special polkadot design on a grey background was chosen for the tourist children's playroom, where easily-cleaned surfaces are essential. Dominating the tourist verandah café are bar fronts of Warerite domino, which has also been used for the tops of occasional tables. The first-class gymnasium has been panelled from deck to deckhead in frost white Warerite. Grey stardust was chosen for the dados in the tourist class dining room and as a surfacing for the automatic revolving doors which lead from this room to the kitchens. Warerite materials were installed in the *Windsor Castle* by the builder, Cammell Laird and Co. (Shipbuilders and Engineers) Limited, Waring and Gillow, Limited, and Heaton Tabb and Co., Limited.

Pakistan Merchant Fleet

AN investment of more than Rs.100 million is expected to be made during the next five years to modernise Pakistan's merchant fleet. All this investment will be in the private sector. Foreign credit may be utilised to pay part of the foreign exchange cost involved in the modernisation programme. It has been estimated that 10 of the cargo ships now plying in the coastal trade will have to be replaced. At least three new ships will be acquired under this programme. The cost is expected to be in the neighbourhood of Rs.27 million. A new passenger ship for the Karachi—Chittagong route has already been ordered. Constructed at a cost of Rs.15 million, it is expected to be commissioned by next October. One new passenger liner will be acquired at an equal cost to handle the Haj traffic. It is proposed to acquire two oil tankers at an estimated cost of Rs.6 million. At present all the oil requirements of the country are brought in foreign tankers and the transport bill amounts to about Rs.27 million a year. With the acquisition of two oil tankers a saving of about Rs. 3 million a year in foreign exchange expenditure is expected to be made. Six secondhand cargo ships may also be acquired to augment the international services run by the Pakistan Shipping Lines, Limited. Until recently Pakistan was paying Rs.80 million annually to foreign shipping concerns for the carriage of its export and import trade.

FINANCIAL RESULTS

NOTES on the trading results, dividends and financial provisions of companies associated with the transport industry are contained in this feature, together with details of share issues, acquisitions and company formations or reorganisations.

R. H. Neal

R. H. Neal, Limited, a company in the Steel group, is paying an ordinary dividend of 20 per cent (nil). Group net profit is £70,544 (£75,688), before tax of £36,647 (£39,981).

Metal Cleaning

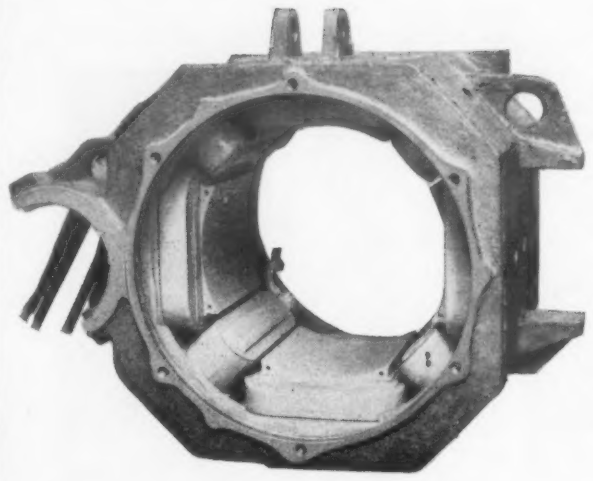
As a first step in developing the business of Metal Cleaning Limited, newest member of the Castrol group of companies, the board of directors has been reconstituted. The new chairman is Mr. Leonard M. Broadway, who is deputy chairman and managing director of Castrol, Limited. Mr. J. A. V. Watson, O.B.E., another Castrol director, is deputy chairman of Metal Cleaning and Mr. Arthur Owen is managing director.

Wagons-Lits

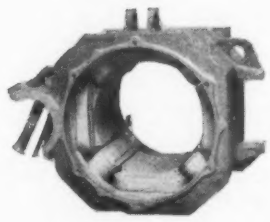
The Compagnie Internationale des Wagons-Lits et des Grands Express Européens S.A., of Brussels, announces the payment of BFr. 25 (15) per share, or a 5 (3) per cent dividend for the 1959 financial year. Turnover of the company rose by 1.7 per cent over 1959, yielding a gross operating profit of BFr. 238,120,000 (206,030,000). The number of passengers using Wagon-Lits sleeping berths rose by 3.8 per cent over the year from 2,093,000 to 2,172,000. In the first four months of the current year business was at the same level as for the corresponding period of last year, though with heavily increased operating costs.

DESIGNING

AND MAKING TRACTION EQUIPMENT



Engineers today have entered upon an era of re-thinking. Something that has always been known, but which has been neglected in the more recent phase of the purely mathematical approach, is now being rediscovered. It is that engineering design is an art as well as a science. This is really no news to the good designer who goes on quietly trusting his eye and his feeling for a sound job. But where does his knowledge—his flair—come from? Quite largely, it seems, from experience. Some of it his own, much of it the common stock of the people he works with. It is the channel through which the total experience of an engineering company such as our own is fed back into new products.
It is not always easy to put one's finger on the details on which it has had an effect. In traction equipment, weight and size must be kept down and it shows up for instance in such things as good space factor obtained by careful pole design. In the design of these motors we were able to make direct use of the experience we had gained with earlier railway motors—as well as more indirectly from hundreds of other equipments built for main line locomotives, shunters, motor coaches and trolley buses.



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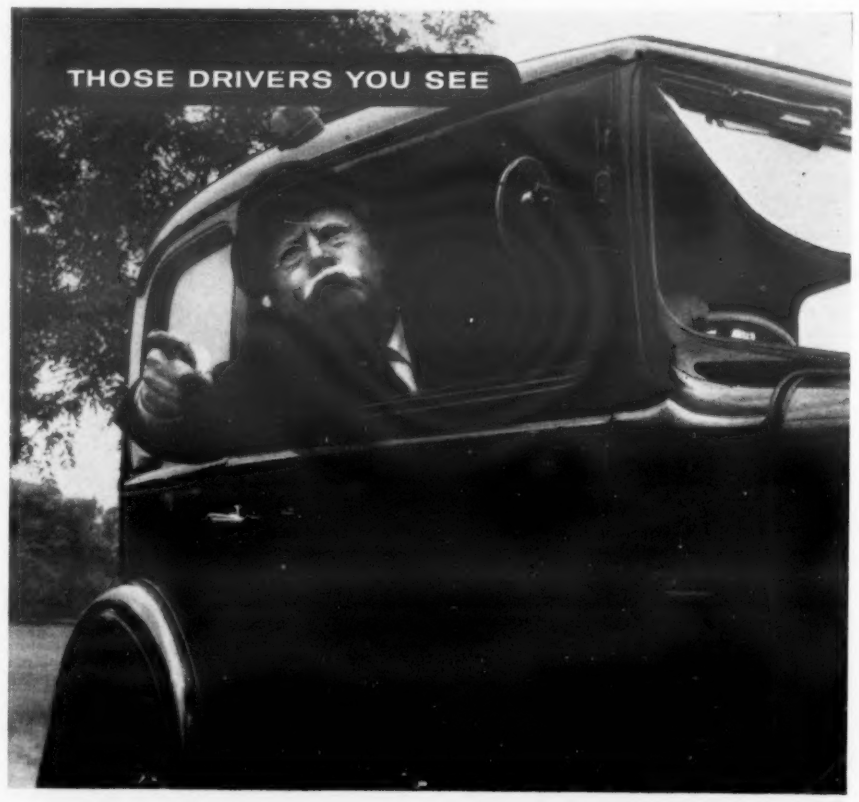

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